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ABSTRACT

A modular design approach for agricultural education has been developed. As part of its development, over 200 modules were produced and tested, and are described in this volume. The modules are categorized as modules of instruction in agricultural production, in agricultural supplies and services, in agricultural mechanics, in ornamental horticulture, in agricultural resources, in forestry, and in leadership development. Each module has a title, code number, brief description of content, and an outline of divisions or units of content with time allocation specified for each unit. The description of content is a narrative statement of the kinds of learnings and activities to be expected in each module. The suggested time allocation is provided to make sure the learning is activity centered. The volume is meant to be used in conjunction with MODULAR DESIGN APPROACH FOR AGRICULTURAL EDUCATION. Complete modules of instruction containing objectives, content, suggested teaching methods, student application activities, suggested evaluation procedures, and a list of resource materials is available from the Bureau of Agricultural Education, Room 1623, Twin Towers, 99 Washington Avenue, Albany, New York 12230. (AG)

module directory

for agricultural education

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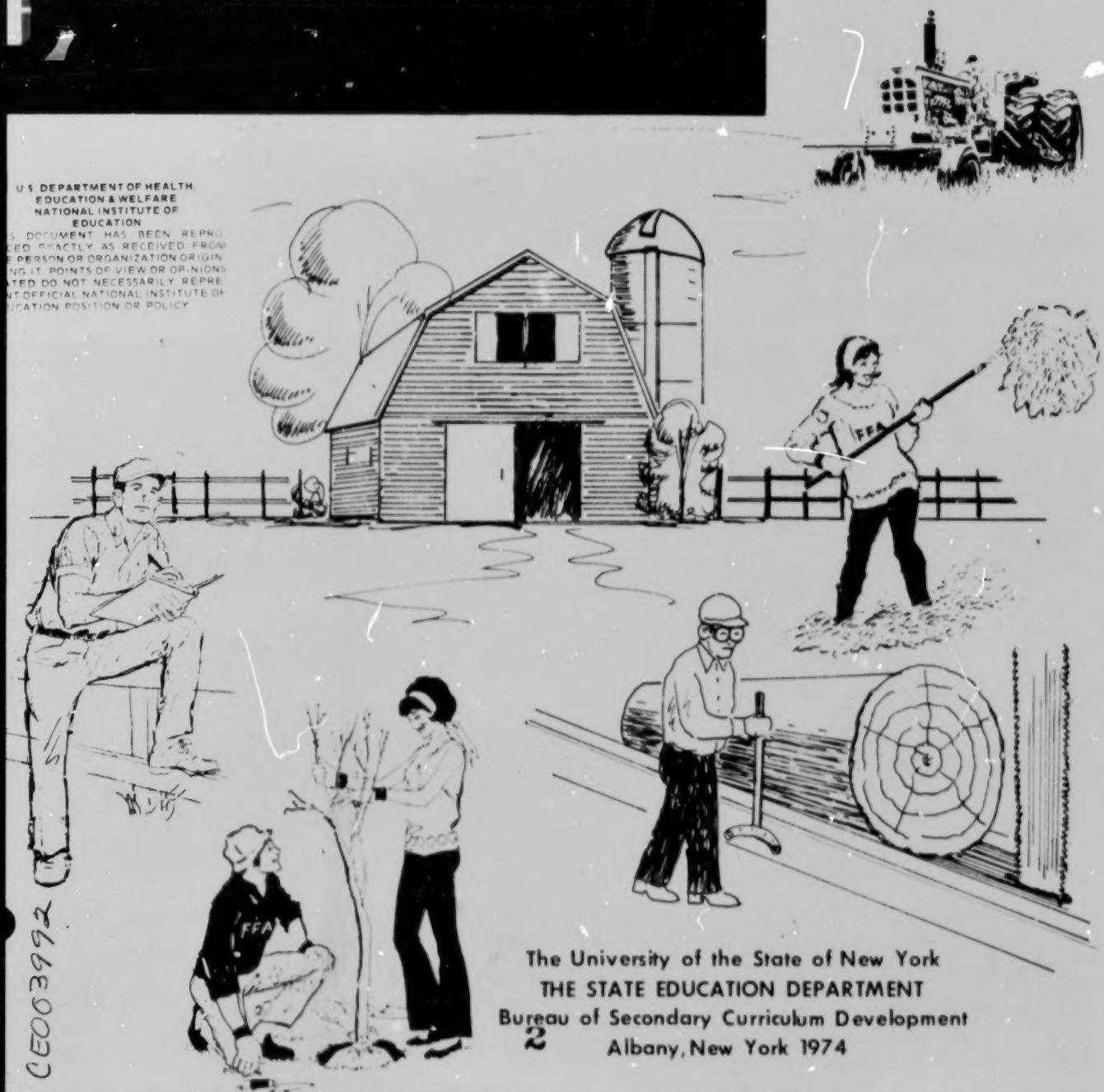

The University of the State of New York
THE STATE EDUCATION DEPARTMENT
Bureau of Secondary Curriculum Development
Albany, New York 1974

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MODULE DIRECTORY

FOR AGRICULTURAL EDUCATION

1974

The University of the State of New York
THE STATE EDUCATION DEPARTMENT
Bureau of Secondary Curriculum Development
Albany, New York 12234

CE 003992

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FOREWORD

This publication is a companion to *Modular Design Approach for Agricultural Education*. Specific suggestions for establishing a program using a modular design are contained in the first publication.

The modules identified in this publication were developed and tested by the persons listed in the Acknowledgements page of the first publication. Individual credit for module development is not possible since the development of the Modular Design Approach was the result of the joint effort of so many involved with the project.

This *Module Directory for Agricultural Education* contains descriptions of all modules developed to date. Division or units of content and suggested time allocations for each module are provided as a base for program planning. This volume will be helpful to administrators, guidance counselors, and teachers in selecting modules to be offered to meet the occupational objectives identified by students. The description of learning activities will help clarify for students their reasons for selecting a module. Home school personnel will find useful information for scheduling students into agriculturally related programs.

Copies of modules will be made available to all schools offering agricultural education. Additional assistance in program implementation can be secured from the Bureau of Agricultural Education.

G. Earl Hay, *Supervisor*
Vocational Curriculum
Bureau of Secondary Curriculum Development

Gordon E. Van Hooft, *Director*
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USE OF MODULE DIRECTORY

The materials in this publication are segments of each of over 200 modules which have been developed as part of the *Modular Design Approach for Agricultural Education*. The module title and classification code number is as listed in the module index. The DESCRIPTION is a narrative statement of the kinds of learnings and activities to be expected in each module. This information should be helpful to teachers and administrators in planning instruction. It should also be helpful to guidance counselors in working with students to design a program to meet their occupational plans.

In some instances students will use the information to decide how a particular module fits into their overall occupational goals.

Major Divisions or Units of Content are included as a further breakdown of the description. Since Agricultural Education is oriented to skill development as well as the acquisition of appropriate knowledge and attitudes, a suggested time allocation is provided to assure that the learning is activity centered.

Complete modules of instruction which are available to all occupational programs offering agricultural education also contain specific objectives stated in student performance terms. A two-page format for teacher use includes objectives, content, suggested teaching methods, student application activities, as well as suggested evaluation procedures. All complete modules also include a listing of resource materials specific to the teaching of each module.

This *Module Directory* should be used by school personnel in conjunction with its companion publication, *Modular Design Approach for Agricultural Education*.

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agricultural production

Title - Producing Quality Milk *Code* - 01.01010101-01

Description:

Students will develop skills needed to produce high quality fluid milk for consumption.

Emphasis will be given to the detection and control of factors which affect milk quality, proper procedure for milking cows, interpretation of milk quality tests, and compliance with herd health regulations.

Divisions or Units of Content	*Time Allocation* Class	Other
1 Factors Affecting Milk Quality	2	16
2 Proper Milking Procedures	2	5
3 Planning To Produce Quality Milk	1	4
	5	25

Title - Dairy Cattle Breeding *Code* - 01.01010101-02

Description:

Focuses on developing a dairy herd breeding program. The student will acquire a knowledge of inheritance and reproduction and study the available methods of breeding dairy cattle in the community. The student will plan and develop an efficient breeding program for a dairy herd which includes determination of proper breeding time, animal identification, breeding difficulties, and record keeping.

The student will visit local farms and the headquarters of an artificial insemination unit.

Divisions or Units of Content	*Time Allocation* Class	Other
1 Fundamentals of Genetics	4	0
2 Physiology of Reproduction	4	2
3 Determining the Proper Time for Breeding	3	0
4 Methods of Breeding	1	0
5 Breeding Difficulties	2	2
6 Establishing Working Relationships With Veterinarians and Inseminators	1	0

Title - Dairy Cattle Breeding (cont'd)

7	Keeping Individual Cow Records	2	2
8	Interpreting A.I. Sire Reports	3	0
9	Determining A Breeding Program	0	4
		20	10

Title - Feeding Dairy Cattle *Code* - 01.01010101-03

Description:

The conversion of feeds into milk at the lowest possible cost is a basic challenge to dairymen. Proper selection of inexpensive feeds of good quality is essential in meeting the needs of the dairy farmer. The farmer is continually feeding animals which do not yet produce in preparation for their productive years. The farmer must also be selective in the choice of feeds used for the milking herd.

Students involved with this module will develop the skills required to meet the nutritional needs of calves, dry cows, and cattle in production. Emphasis will be placed on a good feeding program for calves, nutritional values of feeds, and the requirements for growth, production, reproduction, and maintenance of the herd.

Divisions or Units of Content		*Time Allocation*	
		Class	*Other*
1	Digestive Tract and the Digestive Process	1	2
2	Feeds Available	1	8
3	Nutritional Needs of Springing Heifers and Dry Cows	1	3
4	Nutritional Needs of the Milking Herd	0	4
5	Feeding Practices	2	8
		5	25

Title - Dairy Health and Disease *Code* - 01.01010101-04

Description:

This module will prepare the student to set up a herd health and disease prevention program that will be satisfactory for a dairy herd. Emphasis is placed on the diagnosis and treatment of animals under direction and supervision of veterinarians for specific conditions and diseases. Sanitation and environmental controls will be examined and the

Title - Dairy Health and Disease (cont'd)

necessary health records will be maintained. Students will also become familiar with State and Federal regulations that pertain to sale of cattle and shipment of milk during treatment periods.

Divisions or Units of Content	*Time Allocation* Class	Other
1 Importance of Disease Control	2	0
2 Herd Health Problems	8	10
3 Management for Disease Prevention	4	6
	14	16

Title - Managing the Milking Herd *Code* - 01.01010101-05

Description:

The milking herd is of extreme importance in the dairy farming business. It is composed of the animals which consume the most roughage, and the most concentrates in the herd. These animals create the highest medical costs in the herd, and they are the only ones producing a return both in revenue from their product, and in their individual value. Good management of this segment of the dairy herd is essential to a profitable dairy business.

Students enrolled in this module will be involved primarily with the care and feeding of the dairy herd. The use of production and herd health records will be discussed. Farm business factors will be emphasized.

Divisions or Units of Content	*Time Allocation* Class	Other
1 Care and Handling	1	8
2 Housing Needs	0	6
3 Essential Records	1	2
4 Feeding	0	6
5 Labor Management	1	5
	3	27

Title - Beef Production *Code* - 01.01010102-01

Description:

Beef makes up a major portion of the American diet. A steady diet of good beef has been proven beneficial for body growth in human beings. The American public's demands quite often exceeds the supply since it has realized the ability of beef to provide the high amount of protein needed for human growth and development. The price of beef has increased directly with its demand, resulting in a need for an increased amount of beef production. Marketing factors will be discussed.

This module will involve the student in the development of skills needed to maintain a successful beef operation. The student will develop the skills needed for selecting, starting, and finishing beef for human consumption.

The skills of selecting, castrating, dehorning, clipping, hoof trimming, treating diseases and fitting and showing beef cattle will be emphasized.

Field trips to beef farms, slaughter and packing facilities will be made to familiarize the student with other segments of this industry.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Breeding and Selection of Beef Animals	2	3
2 Herd Health	2	3
3 Feeding, Growing, and Fitting Beef	2	6
4 Housing Requirements and Equipment	2	3
5 Finishing and Marketing	2	5
	10	20

Title - Handling the Foal *Code* - 01.01010103-01

Description:

The student will practice the proper and safe procedure of approaching and catching a foal in a box stall and in an enclosed lot. The art of leading a foal as well as trimming its feet will be demonstrated and practiced. The articles of good grooming and the equipment necessary to accomplish this task will be practiced. Many techniques will be discussed for constraining a foal. At least five different skills will be practiced in administering medications.

Title - Handling the Foal (cont'd)

Divisions or Units of Content	*Time Allocation* Class	Other
1 Catching and Leading	1	6
2 Constraining Methods	2	5
3 Trimming Hooves	0	6
4 Grooming the Foal	0	4
5 Administrating Medications	2	4
	5	25

Title - Harness Training of Horses *Code* - 01.01010103-02

Description:

The student will study the types of harnesses, their functions, and uses. The student will start with the basic ground training necessary for the preparing to hitch the horse to the training vehicle. The student will actually hitch, drive, and present the horse at different speeds and gaits. Arrangements will be made with a nearby race track for the students to observe the way of going so that irregularities or movement defects can be detected.

Divisions or Units of Content	*Time Allocation* Class	Other
1 Bitting Harness	1	2
2 Lunge Line and Long Line	0	2
3 Driving Harness and Hitching	1	2
4 Driving the Horse	0	14
5 Gaits and Speeds	0	5
6 Way of Going	1	2
	3	27

Title - Care of Tack and Equipment *Code* - 01.01010103-03

Description:

Tack and equipment condition is second only to the condition of the horse. Its importance, therefore, can not be over-emphasized. In this module, the student will be involved with the essential phases of conditioning tack and equipment. The student will develop an ability to correctly clean and store tack and equipment. This process will involve the student in "learning by doing."

Title - Care of Tack and Equipment (cont'd)

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Cleaning Supplies	2	0
2 Cleaning Tack	0	18
3 Cleaning of Equipment	0	6
4 Storage of Tack and Equipment	2	2
	4	26

Title - Care of Feet and Legs *Code* - 01.01010103-04

Description:

The student will spend much of the time analyzing the most important part of the horses anatomy - his legs. The student will view horses in order to gain experience in determining what causes horses to become lame and to interfere with its own movements. The predisposition of the common unsoundnesses and what can be done to correct these conditions will be studied.

The wrapping of legs with bandages will be stressed as well as aids to healthy hoof growth.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Anatomy and Nomenclature of the Hoof	2	8
2 Abnormal Posture	0	4
3 Hoof Trimming	2	10
4 Lameness and Unsoundnesses	2	0
5 Wrapping Legs	0	2
	6	24

Title - Swine Production *Code* - 01.01010104-01

Description:

The student will study feeding, breeding, disease control, and swine production management.

The students will visit commercial swine operations to familiarize themselves with the modern commercial operations.

Title - Swine Production (cont'd)

It is suggested that the dairy modules precede the swine module so that the above mentioned areas can be dealt with more effectively.

It is further suggested that in those areas where swine enterprises are of great importance, several modules be developed covering such areas as feeding, breeding, swine health, marketing and management.

Divisions or Units of Content	*Time Allocation* Class	Other
1 Selecting the Breed and Stock for the Swine Herd	3	5
2 Feeding the Swine Herd	6	2
3 Swine Disease and Parasites	5	3
4 Record Keeping and Registration	2	1
5 Swine Management	1	2
	17	13

Title - Sheep Production *Code* - 01.01010105-01

Description:

The student will study breeds, stock selection, feeding, breeding, disease control, management, housing and marketing of sheep.

Visits to area farms where different types of sheep operations are carried on will be made to familiarize the student with the approved practices of the industry.

It is suggested that, in those areas where sheep production is of great importance, several modules be developed to cover in greater detail some of the units covered above. Some of the activities, particularly in marketing, may be difficult to reproduce outside of western New York so substitution or omission is recommended.

Divisions or Units of Content	*Time Allocation* Class	Other
1 Characteristics and Breeds of Sheep	1	1
2 Selecting Stock	2	2
3 Breeding the Farm Flock	1	1
4 Feeding the Farm Flock	3	2
5 Disease and Health	4	2
6 Record Keeping	1	0
7 Housing Requirements and Equipment	1	1
8 Sheep Management Practices	0	2
9 Marketing Products	3	3
	16	14

Title - Poultry Production *Code* - 01.01010106-01

Description:

This module will include the study of modern poultry housing, equipment and facilities, sanitation, and health programs, feeding requirements for chicks, pullets, layers, and the marketing of eggs and poultry products.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 The Poultry Industry	1	1
2 Selecting Poultry Breeds and Strains	2	3
3 Housing Facilities	3	3
4 Sanitation and Health	3	3
5 Feeding Programs	3	1
6 Poultry Marketing	2	3
7 Management of a Poultry Enterprise	1	1
	15	15

Title - Selecting and Handling Dogs and Cats *Code* - 01.0101010701-01

Description:

Students will learn the breeding standards, purpose, and conformation for selection of quality animals. The student will know the basic standards of each group and breed of domestic dogs and cats. With this knowledge, the proper combination of animals may be chosen for breeding.

The methods of properly restraining dogs and cats of all sizes and temperment, by hand and with restraining devices, will be practiced. The advantages and disadvantages of medication for restraint will be observed. Methods of capturing loose animals quickly and safely will also be an important consideration.

The student will develop confidence, patience, and firmness in handling all animals and be able to remove and return them to their cages.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Breed Standards of Cats and Dogs	6	6
2 Safe and Proper Handling of Cats and Dogs	2	16
	8	22

Title - Basic Dog Grooming *Code* - 01.0101010701-02

Description:

The student will be oriented to dog grooming activities. This will include practicing grooming styles and cleaning and maintaining the grooming shop. Knowledge and use of grooming tools will be stressed. Students will develop basic skills in use, maintenance, and a knowledge of the function of this equipment. Time will also be devoted to ordering proper equipment.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Orientation to Basic Dog Grooming	1	9
2 Equipment Needed for Dog Grooming	1	4
3 Function and Proper Use of Equipment	1	6
4 Care and Maintenance of Equipment	1	4
5 Purchasing of Equipment	1	2
	5	25

Title - External Care and Parts of the Dog *Code* - 01.0101010701-03

Description:

In this module the student will be involved in identifying the dog profile. Work will be done with live animals and in the laboratory setting. Particular attention will be given to special aspects of grooming including the dog's nails and ears. Equipment use and care will be stressed.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Dog Profile	1	10
2 Canine Ears	1	8
3 Canine Nails	2	8
	4	26

Title - Training Dogs *Code* - 01.0101010701-04

Description:

The student will learn to train a dog by first learning how dogs react to different types of rewards and punishments. The student will then learn to train a puppy or dog in simple things such as house breaking, controlling barking, and curbing. The student will then learn to train dogs to heel and respond to commands such as sit, stand, and stay. The student will be able to apply this knowledge in training dogs to do tricks such as rolling over and playing dead.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 How Dogs Learn	1	3
2 Simple Training	0	6
3 Novice Obedience Training	0	8
4 Advanced Obedience Training	0	8
5 Teaching Tricks	0	4
	1	29

Title - Care of Birds *Code* - 01.0101010702-01

Description:

The student will learn to identify, care for, and handle the common species of pet and laboratory birds. The identification will include not only the ability to recognize the species of birds, but the methods of ringing or banding the legs of individual birds. The student will learn the environmental requirements such as temperature, humidity, and cage size suited for each species. The student will also learn the feeding requirements and various methods of restraining or handling birds. The student will be made aware of the common diseases and problems of birds as well as nail clipping and simple first aid procedures.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Types of Birds	2	4
2 Environment and Handling	1	9
3 Health and First Aid	2	7
4 Breeding	1	4
	6	24

Title - Care and Maintenance of Tropical Fish *Code* - 01.0101010702-02

Description:

The student will identify the various types of tropical fish and the sex of the individual fish. The proper methods of setting up tropical fish tanks (aquariums) for display, breeding, and sales will be included. He will select and breed both the live bearers and egg laying fish. The student will be able to identify the different types of plants used in aquariums. The care of the fish will include the use of equipment such as air pumps, filters, breeding equipment, and other items used in the aquarium. He also will list the different types of fish diets and the purposes of some of the supplements fed to fish. The student will list and identify the different common diseases of tropical fish and plants as well as some of the other problems of fish tank management. The treatment and prevention of the common diseases will also be covered.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Types of Tropical Fish	1	6
2 Aquatic Plants	1	3
3 Aquarium Operations	1	9
4 Breeding	1	4
5 Diet and Diseases	1	3
	5	5

Title - Care and Handling of Reptiles and Amphibians *Code* - 01.0101010702-03

Description:

The student will identify and handle the different types of non-poisonous reptiles and amphibians normally found in laboratories or pet stores. The identification will include the ability to recognize the different species within each group of reptiles or amphibians. The student will select the housing requirements which include temperature, humidity, area and terrain of cage of each group being studied. The student will select the feed and water requirements of the various groups of reptiles and amphibians and methods of natural and force feeding. The student will recognize some of the common diseases and problems of reptiles and amphibians in captivity. The student will learn some of the basic treatments and preventive measures for those diseases commonly encountered. He will be able to explain some of the methods used to breed reptiles and amphibians in captivity and the rearing of the young.

Title - Care and Handling of Reptiles and Amphibians (cont'd)

Divisions or Units of Content	*Time Allocation* Class	Other
1 Handling Frogs and Toads	1	3
2 Handling Lizards	1	5
3 Handling Turtles and Tortoises	1	5
4 Handling Snakes	1	10
5 Handling Salamanders	1	2
	5	25

Title - Care and Handling of Small Animals *Code* - 01.0101010702-04

Description:

The student will learn to identify and handle the different types of small rodents such as guinea pigs and rabbits. The identification will include the ability to recognize the various strains of each species. The handling will include the ability to determine the sex of the animals from the newborn through the adult stages. By learning the behavioral patterns of the various animals the student will develop an understanding of the animal's needs. This understanding will enable the student to select the proper methods of caging, feeding, and watering of the animal studied. The student will be able to recognize the symptoms of some of the common diseases of small animals.

Divisions or Units of Content	*Time Allocation* Class	Other
1 Identification and Handling of Rodents	1	7
2 Sex Determination of Rodents	0	2
3 Identification and Handling of Guinea Pigs	0	2
4 Identification and Handling of Rabbits	0	2
5 Animal Behavior	0	6
6 Housing and Feeding Small Animals	1	5
7 Disease Symptoms	1	3
	3	27

Title - Handling of Primates *Code* - 01.0101010702-05

Description:

The student will learn to identify and handle the different species of primates. The identification will include the determination of the species, the sex of the animal, and the methods of tattooing or otherwise marking the individual animals. The handling will cover the use of the various types of cages, nets, protective clothing, and other devices used in safely restraining primates. The student will develop an understanding of the animals needs, which will aid the student in the caging, feeding, watering, and cleaning of the primates and their quarters. The student will be made aware of the common diseases of primates.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Types	1	2
2 Conditioning	1	4
3 Handling	1	9
4 Care and Sanitation	0	10
5 Diseases	1	1
	4	26

Title - Internal Parasites of Animals *Code* - 01.0101010703-01

Description:

The student will learn to identify the numerous internal parasites of animals. Students will learn the techniques used for the preparation of specimens for studying this intestinal or blood parasites using a microscope, and for the identification of most parasitic infections. The student will learn the simple staining procedures used in the identification of some parasites and to identify the parasite by use of the egg, cyst, larvae or adult morphology. The student will learn methods of collecting and transporting specimens for parasitic analysis.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Collection and Transportation of Specimens	1	4
2 Identification of Parasitic Nematodes	0	8
3 Identification of Cestodes and Trematodes	0	6
4 Identification of Parasitic Protozoa	1	10
	2	28

Title - External Parasites of Animals *Code* - 01.0101010703-02

Description:

The student will learn to identify the external parasites and pests of animals and their quarters. Emphasis will be placed on identification and control of the vermin infesting the animals and their quarters. Various techniques for the collecting and preparation of the specimens will be taught. The life cycles of the vermins will be covered in order for the student to have a better understanding of prevention and control methods.

The student will learn to treat, prevent and control common vermin problems of animals.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Collection and Preparation of Specimens	1	4
2 Identification of Ticks and Mites	0	8
3 Identification of Fleas and Lice	1	8
4 Identification of Pests of Animal Quarters	0	8
	2	28

Title - Emergency Care of Animals *Code* - 01.0101010703-03

Description:

The student will learn to administer first aid to an animal which has been hurt and is suffering from shock, bites or wounds, poisonous snake or insect bites, infested or infected by ticks or maggots, or poison. The student will also be able to take the body temperature and respiration of a sick animal. Part of his training will be devoted to recognizing outward signs of sickness such as changes in behavior and body coats. The student will learn how to isolate a sick animal from others and maintain proper care for all the animals without danger of infection from the isolated animal. The student will also learn some of the methods used to prevent infections and infestation in animals.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Handling Sick or Injured Animals	0	5
2 First Aid to Animals	2	10
3 Disease Recognition	0	9
4 Disease Prevention and Control	1	3
	3	27

Title - Bathing, Dipping, Dusting, and Handling of Wet Animals

Code - 01.0101010703-04

Description:

The student will learn to bath, dip, dust, and be able to give medicated baths to various animals, primarily dogs for grooming. Each group of animals, due to their particular habits, require different chemicals and methods for the removal of ectoparasites as well as the treatment for the different type of parasites. The dipping and dusting is primarily for the removal of fleas, lice, ticks, or mites. The students will also demonstrate procedures and types of medicated baths. Proper methods of ectoparasite prevention as well as treatment will be observed by students.

Divisions or Units of Content	*Time Allocation* Class	Other
1 Bathing Animals	1	6
2 Methods of Handling Wet Animals	1	4
3 Dipping Various Animals for Removal of Ectoparasites or Treatment of Skin Disorders	1	10
4 The Reasons and Problems of Dusting Animals	1	6
	4	26

Title - Sterilization, Disinfection, and Sterile Packs

Code - 01.0101010704-01

Description:

The student will learn the different methods of packing and opening of sterile packs usually associated with operations. The methods of packing the different types of cloth packs and labeling of their contents will be taught. The student will learn to identify the use of a sterile pack by the instruments it contains as well as the dates of sterilization without having to open the pack. The student will learn the different methods of sterilization with heat, chemicals, or radiation and which methods are best used on different types of material and equipment. The student will also learn the different methods for sanitizing and disinfecting the different types of rooms.

Divisions or Units of Content	*Time Allocation* Class	Other
1 Sterilizing of Equipment	1	7
2 Sanitizing and Disinfection of Rooms	0	8
3 Preparing Sterile Packs	0	6
4 Opening Sterile Packs	0	4
5 Handling Sterile Equipment	0	4
	1	29

Title - Assisting in Surgical Procedures *Code* - 01.0101010704-02

Description:

The student will learn to assist the surgeon in the operating room from the preparation of the room for surgery through the cleaning of the instruments following the operation. This assistance will include the preparation of the surgical trays, the animals including the shaving and cleaning of the surgical area, as well as the post-operative care of the animals. The students will learn to put on surgical caps, gowns, and gloves without contamination. They will also learn techniques of passing instruments to the surgeon and assisting in the procedures by holding instruments, cutting sutures, and cleaning the inscissions. The students will learn to give post-operative care such as taking the animal's temperature and respiration as well as giving them medications.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Preparing the Operating Room	2	4
2 Assisting the Surgeon	0	8
3 Bandaging Animals	0	6
4 Cleaning the Operating Room and Equipment	0	8
5 Post-operative Care of Animals	0	2
	2	28

Title - Radiological Techniques *Code* - 01.0101010704-03

Description:

The student will learn to assist in the taking of X-ray pictures of animals. This assistance will include the loading and labeling of the X-ray film, the positioning of the animal for the X-ray pictures, and the developing of the exposed films. In order to develop the films the student will learn how to mix chemicals such as the developer and fixer. In learning how to assist in the taking of X-ray pictures the student will need to know the various parts and the general operation of the X-ray machine. At the same time the student will learn to protect himself against exposure to X-rays by the proper use of shielding equipment.

The student working in animal laboratories also needs to know how to handle animals which have been treated with radioactive materials. Here the student will learn how to monitor radioactivity in the laboratory and handle the treated animals. The student will learn the proper methods of disposing of the waste products from these animals as well as the cleaning of their cages.

Title - Radiological Techniques (cont'd)

Divisions or Units of Content	*Time Allocation* Class	Other
1 General X-Ray Equipment	1	7
2 X-Ray Procedures for Small Animals	0	5
3 X-Ray Film Care and Developing	1	13
4 Radiological Techniques	1	2
	3	27

Title - Hematology and Urine Analysis *Code* - 01.0101010704-04

Description:

The student will learn to do a complete urinalysis, consisting of tests for albumin, sugar, acetone, ketones, bile, and other chemicals. In addition microscopic examinations should include the identification of red and white blood cells, the different types of casts and tissue cells, as well as the identification of the common crystals found in urine specimens. The student will also learn to count both the red and white blood cells in blood samples to determine the hemoglobin concentration in the sample. The student will learn to make and stain blood smears and identify the different types of blood cells found in the smears. The student will also learn to do sedimentation rates and hematocrits, as well as bleeding and coagulation times.

Divisions or Units of Content	*Time Allocation* Class	Other
1 Urinalysis	1	9
2 Blood Cell Counting	0	10
3 Hemoglobins	0	2
4 Hematocrit and Sedimentation Rates	0	3
5 Reticulocyte and Platelet Counts	0	3
6 Bleeding and Coagulation Procedures	0	2
	1	29

Title - Anesthesia and Euthanasia *Code* - 01.0101010704-05

Description:

The student will learn to assist a veterinarian or doctor in giving anesthesia to an animal. The student will learn how to hold an animal in a state of anesthesia while assisting a veterinarian. The anesthesia methods will include not only the topical and inhalation system but also the injection methods.

The student will learn the humane methods of killing an animal at the directions of the veterinarian. The methods of euthanasia include both the physical techniques such as cervical fractures and the chemical methods including both the overdose of anesthesia and use of approved gases.

Emphasis will be placed on the importance of the proper use of the methods being taught and that they should be used under the supervision of a veterinarian or supervisor.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Factors Governing Choice of Anesthetic	1	2
2 Mode of Administration	0	10
3 Stages of General Anesthesia	0	7
4 Euthanasia	1	9
	2	28

Title - Laboratory Techniques - Small Animals *Code* - 01.0101010704-06

Description:

The student will learn to obtain blood from small animals from both capillaries and veins. The veins from which the student will learn to draw blood include tail veins of rats and mice, the orbital venous plexes of rats and mice, as well as ear (marginal) veins of rabbits, and leg and jugular veins of other small animals such as cats and dogs. The student will also learn to draw both capillary and venous blood from birds.

The student will learn to inject animals including intravenous, intraperitoneal, intradermal, as well as intramuscular and subcutaneous. Other methods of injecting such as intranasal, intraocular and percutaneous will be included. In order to give proper injections the student will learn to calculate weights and measurements along with learning to convert temperature scales.

Title - Laboratory Techniques - Small Animals (cont'd)

The student will learn to handle new, unhandled animals and learn to use normal animal responses to train small animals such as birds and rats.

Divisions or Units of Content	*Time Allocation* Class	Other
1 Obtaining Blood Specimens from Small Animals	1	11
2 Injecting Animals	1	9
3 Calculations Used in Animal Care	1	2
4 Conditioning Small Animals	0	5
	3	27

Title - Legal Rights, Transporting, and Housing of Animals

Code - 01.0101010705-01

Description:

The student will relate the legal requirements of maintaining animals in captivity as well as the laws protecting other animals. The laws governing the transportation, laboratory use, showing and sale of animals will be covered. The student will demonstrate how to package an animal for shipment and insure that there is sufficient moisture available to supply the animals needs for water without endangering the health of the animal.

The students will practice the various methods of keeping records on animals required by law as well as those used in business or laboratory use. In keeping records it is important that the individual animals be identifiable. Therefore, the student will practice the various methods of marking the different species of animals. The marking will include the temporary methods such as collars, stains and bands, and the permanent methods such as tattooing and ear and toe clipping.

Divisions or Units of Content	*Time Allocation* Class	Other
1 Welfare Laws Affecting Animals	3	4
2 Housing Animals	1	8
3 Transporting Animals	1	6
4 Marking Animals and Cages	1	6
	6	24

Title - Genetics and Breeding of Small Animals *Code* - 01.0101010705-02

Description:

The student will learn to establish and maintain various types of small animal breeding programs. This will include the ability to breed a given number of offspring of a species for delivery on a given date. In order to accomplish this the student must be familiar with the general reproduction of animals. Here the student will learn to identify the various parts of the male and female reproductive systems of the small animals. This knowledge will be further used by the students who will then be able to take and read vaginal smears from small animals for purposes of determining the di-oestrous cycles of the animal.

In order to understand the different types of breeding programs the student will study genetics by breeding homozygotes, heterozygotes and various combinations of each using fruit flies, fish, and small mammals. This will enable the student to better understand the inbreeding, linebreeding, and crossbreeding programs that he will be maintaining. The student will learn the gestation times and weaning ages for the various species of small animals being studied as well as some of the common problems encountered in breeding programs. As needed in all breeding programs the student will learn to keep careful records of each program.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Genes and Chromosomes	1	6
2 Genetics	0	4
3 Mammalian Reproduction	1	4
4 Di-oestrous Cycles	1	7
5 Breeding Small Animals	0	2
6 Records	0	2
7 Breeding Programs	1	0
8 Problems of Breeding Animals	1	0
	5	25

Title - Feeds and Nutrition for Small Animals *Code* - 01.0101010705-03

Description:

The student will learn the functions of the different nutrients in the animal diets. In learning the functions of the various nutrients the student will recognize some of the more common symptoms of vitamin and other nutritional deficiencies in small animals. The students will be made aware of the problems encountered in over or underfeeding small animals. In order to prevent these problems the student will learn to set up proper feeding schedules for all the animals in his care.

Title - Feeds and Nutrition for Small Animals (cont'd)

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Nutrients	1	2
2 Specific Requirements for Different Animals	1	4
3 Preparation of Diets	0	5
4 Preparation of Pellets	0	3
5 Preparation of Sterile Diets	0	4
6 Preparation of Feed for Newborn	0	6
7 Feeding Animals	0	4
	2	28

Title - Repair of Equipment *Code* - 01.0101010705-04

Description:

The student will learn to repair animal cages. In the case of wire cages the student will learn to bend wires and, where needed, spot weld new wires in replacement of old. With the solid metal cages or metal trays the student will learn to cut and bend the sheets of metal and spot weld sides together. Emphasis will be placed on keeping sharp edges from contacting animals. The student will also learn to repair fish tanks by either replacing glass sides or repairing simple joint leaks. The student will learn to check pump motors and replace belts and brushes where needed. The students will learn to check and replace defective parts in heaters used in fish tanks and hair dryers. Since many of the restraining devices used with animals are made of leather the students will learn to sew or rivet leather goods. The students will also learn to devise and install special animal equipment such as automatic watering devices, metabolism and exercise cages, and various types of mazes.

This training should enable the student to repair and replace broken equipment in various types of animal quarters such as laboratories, pet stores, and other areas where animals are used or sold.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Repair of Cages	1	7
2 Repair of Air and Water Pumps	2	6
3 Repair of Heaters	1	5
4 Repair of Leather Goods	1	4
5 Development and Repair of Special Equipment	1	2
	6	24

Title - Care and Growing of Insects *Code* - 01.01010199-01

Description:

The student will learn to identify the different types of insects. He will also learn to raise and grow different types of insects such as ants and bees, as well as several different species of beeties. Others would include grasshoppers, katydids, crickets, moths, and butterflies, as well as matis and walking sticks.

This will enable the student to have a constant supply of insects for feeding his insect eating animals. At the same time the student will be introduced to biological control and the role of insects in conservation and his environment.

Emphasis will be placed on growing insects which can be used as safe biological controls of other insects or routinely used as food for other animals.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Establishing an Ant Colony	1	5
2 Growing Beetles in Captivity	1	5
3 Growing Grasshoppers and Crickets	1	3
4 Growing Mantis and Walking Sticks	1	2
5 Raising Butterflies and Moths	1	3
6 Bee Keeping	1	5
7 Uses of Insects	1	0
	7	23

Title - Feeds and Feeding *Code* - 01.010102-01

Description:

In this module students will develop skills needed to determine animal nutritional needs, calculate nutritional values of feeds, select animal feeds, and follow recommended practices in feeding livestock.

Students will be given the opportunity to develop a feeding program for either beef, dairy, horses, poultry, sheep, or swine.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Digestive Tract	1	2
2 Meeting nutritional needs of Livestock	2	6
3 Selecting Feeds to use for Livestock	1	4
4 Determining Livestock Feeding Practices	1	9
5 Balancing a Ration	2	2
	7	23

Title - Planning A Breeding Program (Livestock) *Code* - 01.010103-01

Description:

Students will develop knowledge and skills required to carry out a successful livestock breeding program. Emphasis will be on the selection and mating of animals to produce a profit. Students will learn how to identify breeding problems and symptoms related to reproductive diseases. The importance of records will be discussed. Students will learn how to keep and use breeding charts.

Artificial insemination of animals will be covered in the Dairy Cattle Breeding module.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Basics of Livestock Genetics	4	0
2 Basics of Livestock Reproduction	4	8
3 Livestock Reproduction Practices	2	7
4 Planning a Breeding Program	1	4
	11	19

Title - Maintaining Livestock Health *Code* - 01.010105-01

Description:

The prevention of animal disease is emphasized in this module. Students will develop skills in recognizing animal stress, maintaining sanitary housing, and using health records to prevent disease problems.

Students will be involved in the recognition of symptoms of diseases that are common to production livestock (beef, dairy, horses, sheep, swine). The appropriate action following the diagnosis of a disease requiring veterinary service, quarantine, and emergency treatment are also covered.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Recognizing Disease Symptoms	1	2
2 Treating Livestock Diseases	2	9
3 Prevention of Livestock Diseases	4	12
	11	23

Title - Livestock Housing *Code* - 01.01010602-01

Description:

Selection of housing will be evaluated for specific types of livestock based on temperature, space requirements, and location of facilities.

Using skills developed, the selection of a housing design for a given animal production enterprise will depend on efficient use of labor, ease of mechanizing operations, and initial cost of structure.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Planning Livestock Housing Facilities	2	2
2 Housing Requirements for Various Types of Livestock	4	2
3 Types of Livestock Housing Available	6	14
	12	18

Title - Selection, Registration, Fitting and Showing of Foundation and Replacement Stock *Code* - 01.01010699-01

Description:

Students enrolled in this module will be involved in the selection and replacement of livestock. The students will be working with procedures in judging and selecting livestock for longevity, conformation, and productive ability. Considerable time will be spent on laboratory type exercises.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Breeds of Dairy Cattle	1	2
2 Breeds of Beef Cattle	1	2
3 Registration of Cattle	1	2
4 Livestock Selection	1	8
5 Methods of Selection	½	3
6 Fitting and Showing of Cattle	1	5
7 Classification of Dairy Cattle	½	2
	6	24

Title - Management of Young Dairy and Beef *Code* - 01.01010699-02

Description:

Students enrolled in this module will be primarily involved with the care of newborn and young cattle. A special emphasis will be placed on housing faciiities, health, and feeding. Other involvements include the skills of dehorning, castration, removal of extra teats, hoof trimming, clipping for show. The recognition of heat and parturition will be covered.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Care and Handling of Calves at Birth	2	3
2 The Housing Needs of Calves	1	3
3 Feeds and Feeding Practices of Calves to 6 Months	2	4
4 Special Health Management Practices	1	3
5 Feeding and Management of Youngstock from 2 Months to Freshening	2	9
	8	22

Title - Raising Dairy Beef *Code* - 01.01010699-03

Description:

The student will be involved with developing the skills needed for the starting, growing, finishing and marketing of dairy beef for human consumption.

Emphasis will be placed on breed selection for maximum growth, feeding, castrating, inoculating the calf, feeding and finishing the steer.

Special feed and housing requirements will also be determined.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Selecting, Feeding, Housing	4	6
2 Health	2	3
3 Growing	4	6
4 Finishing and Marketing	2	3
	12	18

Title - Planning the Cropping Program *Code* - 01.01020103-01

Description:

The plan for a cropping program depends on the type of farm enterprises, geographic location, alternative markets, and varieties of crops available. Students will develop skills in planning a suitable cropping program that will provide adequate feed for a particular enterprise.

Analysis of the characteristics of the land, micro-climate, and feed requirements or markets of several farms will be conducted in order to determine crop programs best suited to such enterprises or markets.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Cropping Considerations	4	5
2 Determining the Soil Productivity	2	4
3 Selecting the Crops and Varieties	4	2
4 Crop Inputs	2	1
5 Determining the Crop Requirements for a Specific Enterprise	6	0
	18	12

Title - Growing the Crop *Code* - 01.01020103-02

Description:

The student will be involved in the preparation of the soil, timing of planting, planting, and culture of the crop. Conventional tillage and minimum tillage methods will be compared. The care of seeds, planting depth, width of rows, plant population, fertilization, and lime requirements will be discussed.

Controlling insects, diseases, and weeds will be discussed. The use of the proper insecticides and herbicides will be included in this instruction.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Choosing the Crops	1	1
2 Limiting Factors of Crop Production	2	3
3 Preparing to Plant the Crop	1	4
4 Planting the Crop	1	4
5 Controlling Weeds, Insects, and Diseases	4	3
6 Crop Records	1	2
	10	20

Title - Harvesting Field Crops *Code* - 01.01020103-03

Description:

Students will develop skills in determining weather conditions favorable to harvesting, determining optimum time to harvest crops, selecting, preparing, and adjusting equipment for harvesting crops. Students will analyze modern grain and forage crop harvesting systems.

The safe and efficient operation of harvesting equipment will be studied by students. Machinery and equipment adjustments for optimum efficiency will be discussed.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Determining When to Harvest Field Crops	3	5
2 Harvesting Methods and Procedures	2	8
3 Adjusting Harvesting Equipment	3	9
	8	22

Title - Storing the Field Crop *Code* - 01.01020103-04

Description:

The farmer must insure that he has adequate storage facilities to store the crops he produces. He must select the storage facility that will maintain the quality of feed stored. Crops must be protected from weather damage, excessive moisture, heat build-up, and rodents. The student will investigate the types of bins, cribs, and storage facilities as each is related to a specific crop. The advantages and limitations of storage facilities will be investigated. The economics involved in selecting storage facilities will be emphasized.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Selecting Storage Facilities	3	8
2 Hazards Encountered in Storing Crops	3	3
3 Methods of Storing Field and Forage Crops	3	10
	9	21

Title - Weed Control in Field Crops *Code* - 01.01020103-05

Description:

The super production of most crops is usually expected in American agriculture. For this reason our society has been able to enjoy an abundance of available nourishment exceeded by no other country in the world. Extensive knowledge in the areas of soils, fertilization, pesticides, and herbicides has greatly assisted our farmers in successful crop production.

This module deals with the control of weeds through proper tillage and the use of herbicides.

The student will be involved with weed identification and categorization and the selection of chemical and mechanical weed control methods available today to facilitate greater production.

Emphasis will be placed upon proper selection of herbicides and safe handling of the chemicals and equipment used in weed control.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Identification of Weeds	2	8
2 Mechanical Weed Control	0	1
3 Chemical Weed Control	1	7
4 Safe Use of Machinery and Chemicals	1	10
	4	26

Title - The Cultural and Management Practices of the Apple Orchard *Code* - 01.01020105-01

Description:

The apple producer must always keep his orchard healthy to produce at maximum capacity. Trees that no longer produce must be removed and new trees established. Students will be involved with the selection of apple varieties, planting systems, and rootstocks based on soil and climatic conditions. They will develop plans to maintain orchard nutrition and practice methods of pollination, pruning, training, and tree propagation.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Planting Systems and Rootstocks	3	3
2 Variety Selection	2	2
3 Fruit Tree Nutrition and Orchard Soils	2	4

Title - The Cultural and Management Practices of the Apple Orchard (cont'd)

4	Basic Pollination Procedures	1	2
5	Pruning and Training	2	4
6	Basic Methods of Tree Propagation	1	1
7	Orchard Pest Control	1½	1½
		12½	17½

Title - Controlling Apple Diseases *Code* - 01.01020105-02

Description:

This module will enable the student to identify both major and minor diseases of the apple orchard. The student will develop a working knowledge of primary recommendations to control major disease problems at the proper time and be able to safely handle and operate application equipment.

Divisions or Units of Content		*Time Allocation*	
		Class	*Other*
1	Identification of Apple Diseases	2½	3
2	Disease Life Cycles	3½	2
3	Spray Recommendations (Fungicides)	2	4
4	Spray Application-Preparation and Equipment Operation	4	7
5	Safety	1	1
		13	17

Title - Controlling Apple Insects *Code* - 01.01020105-03

Description:

This module will enable the student to identify the primary insect pests of apples. In addition life cycles of these insects will be studied and the damage caused by them. The student will develop a working knowledge of recommended spray materials and develop skills necessary to operate equipment for applying insecticides. Students will be able to identify field injury resulting from insects and be exposed to new techniques in insect control.

Title - Controlling Apple Insects (cont'd)

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Identification of Apple Insects and Their Damage	3	6
2 Insect Life Cycles	4	2
3 Spray Recommendations	3	1
4 Spray Application, Preparation, and Equipment Operation	2	4
5 Safety	1	2
6 Insect Trap Techniques and Monitoring	½	1½
	13½	16½

Title - Harvest, Marketing, and Storage of the Apple Crop

Code - 01.01020105-04

Description:

New York State apples are available during most of the year because of effective harvesting, storing, and marketing methods. This module is designed to consider both the technical and skill aspects of these factors. The student will examine the industry and production cost factors.

The student will be able to determine apple maturity and evaluate methods of harvest. Methods of storage will be compared and grading standards discussed with consideration given to marketing channels. The student will be able to identify the primary problems of the apple industry and pose solutions.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Understanding the Apple Industry	4	2
2 Apple Harvest	2	4
3 Apple Storage	2	4
4 Apple Marketing and Grading	4	4
5 Identification of Industry Problems and Consideration of Solutions	2	2
	14	16

Title - Producing Vegetable Crops for Processing *Code* - 01.01020107-01

Description:

The costs and returns of producing vegetable crops for processing will be reviewed by students enrolled in this module as they develop skills in the selection of vegetable varieties in demand by vegetable processors. Cultural practices for the production of high quality vegetables will be discussed.

Processor contracts, quality of vegetables to be harvested, and types of equipment needed to economically produce processing vegetables are areas in which students will work.

Special services such as grading and packing the raw vegetable products will be performed by students.

Divisions or Units of Content	*Time Allocation* Class	Other
1 The Costs of and Returns on Vegetable Crops Raised for Processing	3	4
2 Negotiating Contracts With Vegetable Processors	2	5
3 Cultural Practices for Vegetable Production	4	2
4 Harvesting and Packing Techniques for Processing Vegetables	2	8
	11	19

Title - Snap Bean Production *Code* - 01.01020107-02

Description:

This is a study of the vegetable industry and the problems involved in snap bean production. Laboratory periods will include practical experience in the cultural operation of growing and harvesting vegetable crops.

Laboratory experiences involve cost accounting procedure specific to vegetable crops. Adjustment and maintenance of field equipment specific to vegetable crops will be covered.

Divisions or Units of Content	*Time Allocation* Class	Other
1 Costs and Returns on Vegetable Crop	2	2
2 Processor's Contract Provisions	2	0
3 Selecting a Suitable Field	1	2
4 Fertilizing Snap Beans	1	2
5 Planting and Chemical Weed Controls	1	4
6 Insect and Disease Controls	2	2
7 Cultivation	2	2
8 Harvesting and Delivering	1	4
	12	18

Title - Plant Disease Control *Code* - 01.010208-01

Description:

A definite portion of plant science must be devoted to the plant, its susceptibility to diseases, and the control of these diseases. In order to maintain plant health and economic stability in raising crops, one must understand the methods of efficient control of plant diseases.

The student studying this module will be involved with identifying the causes and symptoms, as well as the controlling of disease in plants which are common to production agriculture.

Emphasis will be placed upon identification of disease symptoms, and relating these to the causal organisms. Safety in the use of chemical controls and the machinery involved will also be emphasized.

Much of the laboratory time will be devoted to gathering and analyzing specimens and using machinery.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Identification and Control	1	23
2 Safe use of Machinery and Chemicals	0	6
	1	29

Title - Plant Insect Pest Control *Code* - 01.010208-02

Description:

Insects are an important part of our world's life cycle. They are usually classified as useful or harmful types, depending upon their use to man. If insects could carry on their life cycles unmolested, they would maintain their own natural equilibrium. The foods required by various insects range from decaying meats, blood and fecal matter, and other insects; to plants. Their herbacious diets are of prime importance to man because of the great demand of foods used for human consumption. Many humans feel they cannot afford to sacrifice a portion of their food for the welfare of insect life. They, therefore, attack insects through the use of poisons called insecticides.

Students studying this module will be involved with the insect problems of their area, the means by which insects eat, and methods available for controlling the insects classified as pests.

Title - Plant Insect Pest Control (cont'd)

Emphasis will be placed upon the recognition of insects, their means of feeding, and the methods used in controlling their populations and food consumption. The student will be involved with the use of insecticides and their applications. He will also be required to collect and identify specimens.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Identifying Insects	1	6
2 Life Cycles of Insects	0	2
3 Feeding Methods of Insects	1	11
4 Controlling Insects	0	9
	2	28

Title - Farm Business Records *Code* - 01.010401-01

Description:

Like all modern business enterprises, the farm enterprise must keep accurate records of all aspects of its business. Records should be kept on all labor needs, machinery used, cost per acre of each crop, inventory, and production. These are essential when analyzing the business, preparing income tax forms, asking for credit at a bank, or making future farm decisions. The student will be involved in farm business record activities in this module.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Needs and Uses of Records	2	2
2 Records That Should Be Kept By Each Farm	2	2
3 Modern Business Forms Used in the Farm Business	2	20
	6	24

Title - Using Livestock Records to Improve Production *Code* - 01.010402-01

Description:

The modern farmer, like other businessmen, needs accurate records in order to be competitive in his field.

Title - Using Livestock Records to Improve Production (cont'd)

The importance of recordkeeping will be stressed as it relates to livestock performance. Students will chart and compare growth, breeding, production, and health records needed so that the selection of outstanding individual animals could be made.

Emphasis will be placed on keeping accurate records in such areas as milk production, breeding, egg production, litter size, and efficiency of converting feed into usable product.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 The Importance of Keeping Livestock Growth, Production, Breeding, and Health Records	3	0
2 Utilizing Growth Records on Growing Animals	3	2
3 Calculating Lactation Curves	2	0
4 Efficiency of Feed Conversion	3	0
5 Using Parent-Progeny Information	4	0
6 Calculating Conception Rate	2	1
7 Using the Herd Health Record	2	1
8 Analyzing Production Records	3	2
9 Importance of Accuracy in Keeping Records	1	1
	23	7

Title - Farm Business Analysis *Code* - 01.010403-01

Description:

The modern farm operator must constantly evaluate all aspects of his operation and make plans to reorganize those areas that need improvement. He must keep accurate records of production and labor, and an inventory of current supplies. He must use modern business techniques if he is to compete in this industrialized farming era. This module will give the student an opportunity to learn how to analyze factors of rates of production, labor efficiency, and costs to improve his farm operation.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Importance of Farm Business Analysis	2	3
2 Calculating Farm Business Measures	10	5
3 Analyzing Farm Businesses	5	5
	17	13

Title - Planning Farm Power Machinery and Equipment Needs

Code - 01.010403-02

Description:

The student will study the farm power, machinery, and equipment needs of a farm business. The size and type of farm, soils and topography, as well as capital and labor resources will be studied.

This module will include the criteria used in purchasing machinery and equipment, selecting the dealer, whether to purchase new or used equipment, and scheduling equipment purchases.

Students will take field trips to farm machinery dealerships and farms to better understand the problems involved in meeting the farmer's power, machinery and equipment requirements.

The economics of owning, renting, leasing, cooperative ownership and custom hire of machinery for a particular farm business will be discussed.

The fixed and operational cost of owning and operating machinery will be studied.

Students will learn how to keep and use farm power and machinery records and to compare these records of costs with farms throughout the State to determine the investments and efficiency of a particular farm business. The total investment in machinery and its relationship to labor income will be studied.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Determining Needs	3	6
2 Alternatives Available	3	6
3 Purchasing	3	3
4 Records	3	3
	12	18

Title - Farm Labor Management

Code - 01.010404-01

Description:

Management of farm labor has become an integral part of the farm business. Hiring and keeping interested and dedicated individuals is essential to everyone involved in the agricultural industry.

Students involved in this module will be primarily involved with determining labor needs, methods of advertising, evaluating prospective employees, incentive plans, state and federal requirements, required

Title - Farm Labor Management (cont'd)

records, and employer-employee relationships. Emphasis will be placed on agricultural conditions in the local area and statewide.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Determining Labor Needs in the Farm Business	1	4
2 Techniques of Securing Farm Labor	2	7
3 State and Federal Regulations	1	2
4 Labor Records	4	2
5 Employer-Employee Relations	2	5
	10	20

Title - Marketing Farm Products *Code* - 01.010405-01

Description:

Agricultural products are marketed through local buyers, commission firms, cooperatives, auctions, roadside markets and by direct sales.

This module involves students in the study of the marketing procedures that include advertising, grading, pricing, and distributing. Students will be given an opportunity to select specific farm products and prepare a plan to market them.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Pricing and Promoting Farm Products	3	6
2 Functions of Marketing Agencies	3	10
3 Planning to Market Farm Products	1	7
	7	23

Title - Marketing Livestock Products *Code* - 01.010405-02

Description:

Marketing livestock products is a complex activity. This module will provide the student with specific activities related to a specific type of livestock of principal concern to the student. The law of supply and demand will be studied as well as sources of information on marketing. The student will be involved in the analysis and evaluation of marketing reports that will indicate the past, present, and future outlook.

Title - Marketing Livestock Products (cont'd)

Divisions or Units of Content	*Time Allocation* Class	Other
1 Livestock Prices and Information	3	6
2 Livestock Marketing Agencies	2	4
3 Livestock Market Grades	1	5
4 Marketing Livestock Products	1	8
	7	23

Title - Starting a Farm Business *Code* - 01.010406-01

Description:

The selection of a farm enterprise is based largely on the types of land available, market outlets in the area, and the interests and skills of the owner. Following the selection of the farm enterprise, students are involved in the selection of suitable farms with proper elevation, topography, adequate acreage, and buildings to meet the farm needs. Upon selection of a farm, students enrolled in this module will develop skills in the selection of credit sources and how to develop and maintain good ratings. Students will also become involved in methods that can be used to become established in a farm business. Students will select enterprises that should be successful when given specific land resources.

Divisions or Units of Content	*Time Allocation* Class	Other
1 The Selection of a Farm	4	2
2 Ways of Getting Established in Farming	2	2
3 Obtaining Financial Backing and Establishing Credit	3	9
4 Long-range Planning for Future Land, Buildings, Machinery, and Livestock Needs	4	4
	13	17

Title - Reorganizing A Farm Business *Code* - 01.01010406-02

Description:

Students will study problems in the farm business and the making of adjustments to them. Farm production, size, labor efficiency, enterprise emphasis, and capital distribution are principal indicators of farm business efficiency and productivity.

Title - Reorganizing A Farm Business (cont'd)

Following an evaluation of the farm enterprise, the student will develop a list of priorities for improving the factors limiting business. Decisions affecting the future of the farm operations will be based on efficiency of management, changes in farm technology, and of labor availability.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Identify Resources Available to the Farmer	2	6
2 Evaluating the Farm Enterprise and Identifying Problem Areas	6	2
3 Establishing Priorities to Correct Business Deficiencies	6	2
4 Planning for Future Business Change	4	2
	18	12

Title - Farm Business Insurance *Code* - 01.010406-03

Description:

Students studying the Farm Business Insurance module will be involved in the selection and use of various types of insurance considered necessary for the safe financial operation of a farm business.

Liability, property, and motor vehicle insurance will be considered by students in relation to the level of risk and size of business for a given farm situation.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Making Decisions About Insurance	1	1½
2 Insurance Terms, Types of Insurance Coverage, and Types of Insurance Companies.	3½	2
3 Selecting Types and Amounts of Insurance for the Entire Farm Business	3	5
4 Selecting an Agency	1	1½
5 How to Purchase Insurance	1½	4
6 Making Claims	1½	4½
	11½	18½

Title - Farm Business Law *Code* - 01.010406-04

Description:

The person engaged in any agricultural enterprise is constantly involved in application of the law. From this module the student should gain a genuine respect and intelligent appreciation for a segment of the law that affects him at home and at work. The student will develop an understanding of the law, particularly as it effects farming enterprises. He will learn to use the law to avoid legal pitfalls.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 The Nature of Law; Violations of Laws	9	8
2 Contracts and Agreements	3	2
3 Transfer of Ownership	2	1
4 Partnerships and Corporations	2	3
	16	14

Title - Farm Organizations *Code* - 01.010407-01

Description:

Our American system functions on the principal of majority rule, which involves the interaction of large groups. In turn, these groups result in strong organizations. Agriculture is an industry which relies heavily upon its organizations to teach and promote its business. Due to the nature of production agriculture, farmers have always been strongly individualistic. As a group they have found it economically necessary to turn to organizations which meet their specific needs.

These organizations may be local, state, or national; as well as civic or agricultural.

Students taking this module will be involved with organizations which can accommodate their needs as farmers. Emphasis will be placed on local organizations. The work involved will deal primarily with meeting with the leaders of these organizations and discussing their functions.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Organizations Available to Farmers	2	13
2 Specific Uses of Organizations to Farmers	1	10
3 Using Organizations to Support the Farmers Needs	1	3
	4	26

Title - Government Programs for Farmers *Code* - 01.010408-01

Description:

The dynamic field of agriculture is stimulated and supplemented by our government through educational assistance, specific services, and financial reimbursement. Many government supported programs promote a desire to enrich and conserve the soil, rebuild properties, and protect the American consumer from possible encumbrances of which he is unaware.

The student will be involved with identifying programs that are available, and determining how to take advantage of the facilities and services available through government programs. He will be concerned with evaluating programs and making decisions regarding the programs of concern to him.

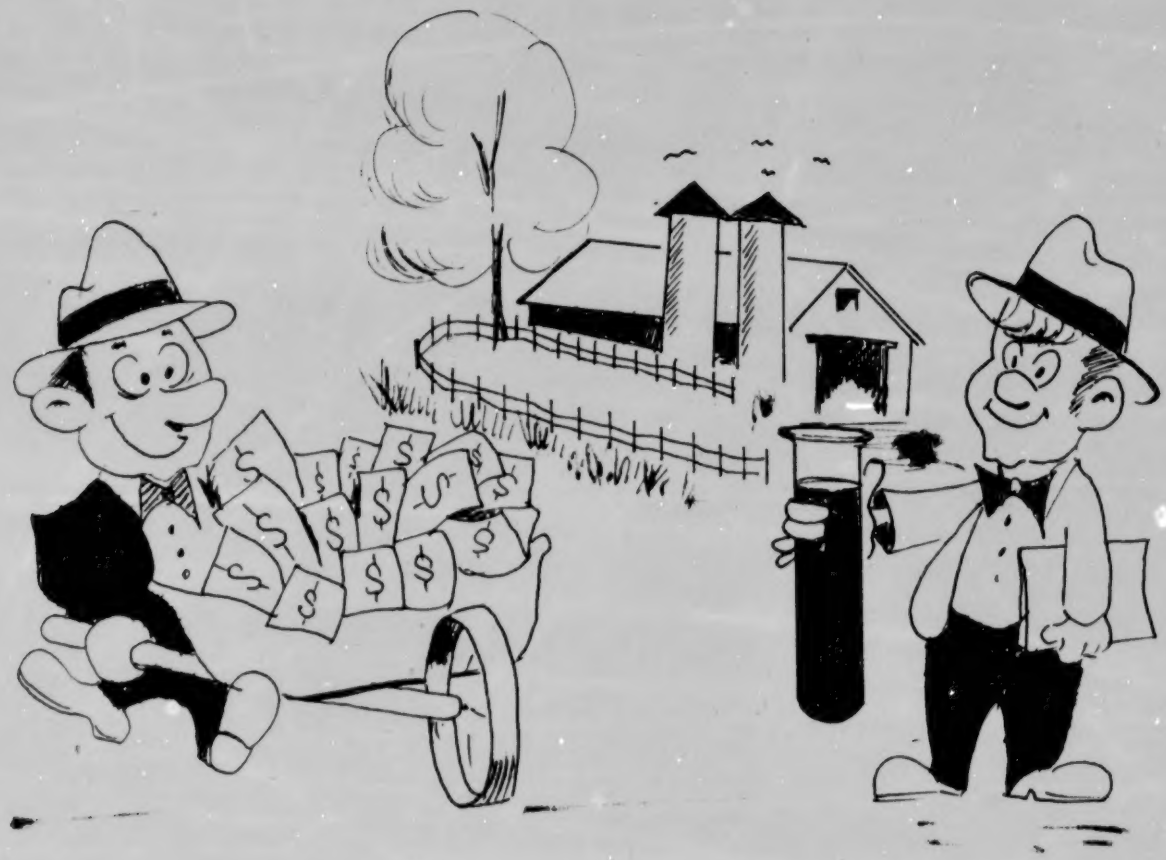
Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Government Program Available to Farmers	5	5
2 Providing Services to Farmers	1	3
3 Programs Providing Financial Reimbursement to Farmers	1	3
4 The American Consumer and the Farmer	5	3
5 Using Programs to Support the Needs of Farmers	2	2
	14	16

Title - Using Service Agencies *Code* - 01.010499-01

Description:

There are many service agencies that provide information and assistance to farmers. These agencies can be listed in the categories of production, construction, financing, marketing, and management. Agencies rendering such services include Extension Service, Production Credit Association, Soil Conservation Service, State College of Agriculture at Cornell, and many others. Farmers must be able to use these agencies to be successful in their business.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Services Available to the Farmer	2	6
2 Agencies Providing Services to Farmers	2	6
3 Using Agencies to Solve Farm Problems	4	10
	8	22



agricultural supplies and services

Title - Sales of Chemicals for Agricultural Use *Code* - 01.0201-01

Description:

Students completing this module will develop skills and abilities needed to assist in making sales of agricultural chemicals under close supervision. Selling activities at the entry level of employment are limited to assisting customers in making their own decisions by providing them with helpful information. Application of chemicals, sprayer calibration, or mixing of pesticides is not included. The student will not be an expert on agricultural chemicals. He will be able to assist customers with a broad range of basic pest control problems, however.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Use of Agricultural Chemicals in Controlling Pest and Disease	6	12
2 Safe Handling of Agricultural Chemicals	2	3
3 Selling Agricultural Chemicals	3	4
	11	19

Title - Sale of Feeds and Feedstuffs *Code* - 01.0202-01

Description:

Students in this module will develop entry level skills needed to make sales and render related customer services in a feed store. Emphasis will be on feed salesmanship, merchandising, and the economics involved in preparing and formulating animal feeds.

It will be assumed that students enrolling in this module will be able to balance rations to meet animal nutrient requirements, and will have developed basic salesmanship skills prior to enrollment.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Feed Skills Needed Prior to Selling	5	10
2 Feed Merchandising	1	4
3 Feed Salesmanship Skills	1	9
	7	23

Title - Sales of Seeds and Plants *Code* - 01.0203-01

Description:

This module will provide students with skills and abilities needed for employment in agricultural firms selling seeds and plants. At the entry level of employment, selling is limited to assisting customers in selecting seeds and plants. Students will be able to identify common plants and their seeds. They will understand Federal and State seed laws and their application. The module "Agricultural Product Salesmanship" is recommended for those who wish to gain further sales responsibility.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Seeds and Plants for Farm and Home	2	6
2 Selecting Seeds and Plants	4	10
3 Selling Seeds and Plants	2	6
	8	22

Title - Sales of Fertilizers *Code* - 01.0204-01

Description:

This module is designed to provide students with skills and abilities needed as an employee of an agricultural supply business selling fertilizer. Students will identify plant growth needs in relation to fertilizer and assist customers in meeting their fertilizer needs. Students will make actual recommendations to a limited extent. They will calibrate and operate some types of fertilizer applicators.

The module on Agricultural Product Salesmanship should be completed by those who wish to advance in fertilizer sales.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Plant Growth Needs	2	6
2 Fertilizer Materials	2	4
3 Determining Fertilizer Needs	1	4
4 Fertilizer Application	1	4
5 Selling Fertilizer	2	4
	8	22

Title - Display and Advertisement of Agricultural Products

Code - 01.0205-01

Description:

The module will provide students with introductory material about display and advertisement. Students will build displays and plan elementary promotion campaigns with selected merchandise. Much time will be spent in field trip activities involving on-the-job display assembly and maintenance. Each student will act as a member of a supply store planning an advertising calendar and budget. Students will also create displays and advertisements on selected items of agricultural merchandise.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Creation of Displays and Advertisements	2	10
2 Assembly and Maintenance of Displays	2	10
3 Building and Advertising Budget and Calendar	4	4
	8	22

Title - Advanced Advertising for Agriculture

Code - 01.0205-02

Description:

The major emphasis of this module will be on the extension of knowledge and practice gained by students in the display and advertisement module. Students will be involved in more writing and creative activities in advertising. They will work as a team in conducting a local market survey and then prepare appropriate promotion activities.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Preparing Displays	2	10
2 Planning Promotion Days	1	2
3 Writing Advertisements	3	5
4 Making a Market Survey	3	4
	9	21

Title - Agricultural Product Salesmanship *Code* - 01.0205-03

Description:

Elementary salesmanship presents students with the task of practicing and perfecting the making of a sale. Each student will spend a majority of his or her time making sales under simulated and actual conditions. Students will be expected to use and apply knowledge about agricultural products gained in other modules.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Developing Sales Presentation Skills	4	11
2 Using Sales Equipment	5	10
	9	21

Title - Recordkeeping I for Agricultural Businesses *Code* - 01.0206-01

Description:

The daily recording aspects of agricultural business will be examined by students. Students will, under simulated conditions and in actual situations, examine and prepare forms used during customer transactions in agriculture businesses. Students will develop skill in using inventory and stock control records, sales records, and other business information records.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Needs for Business Records	1	2
2 Inventory and Stock Control Records	1	5
3 Sales Records	2	11
4 Business Information Records	1	7
	5	25

Title - Recordkeeping II for Agricultural Businesses or Agriculture Business Bookkeeping and Accounting *Code* - 01.0206-02

Description:

Bookkeeping in agricultural business is a necessity. This module provides the student with opportunity to examine and make entries in books. Students will also be involved with accounting procedures used in business analysis. Analyzing records and preparing budgets are as important as accurate records in a business and will be dealt with in this module.

Title - Recordkeeping II for Agricultural Business or Agriculture Business Bookkeeping and Accounting (cont'd)

Divisions or Units of Content	*Time Allocation* Class	Other
1 Accounts Receivable and Payable	2	6
2 The General Ledger	2	6
3 Analyzing Records	2	5
4 Preparing a Budget	2	5
	8	22

Title - Analyzing Agricultural Business Records *Code* - 01.0206-03

Description:

Students having knowledge of recordkeeping will develop abilities to analyze and compare records from similar businesses. Students will calculate measures of business efficiency and use the calculations to analyze agriculture businesses. Time will be spent conferring with managers and accountants about this financial control system.

Divisions or Units of Content	*Time Allocation* Class	Other
1 Understanding Business Analysis	2	3
2 Determining Business Measures	4	11
3 Analyzing Business Records	2	8
	8	22

Title - Securing Employment-Employee Responsibilities *Code* - 01.0207-01

Description:

One of the principal reasons for occupational education in agriculture is to provide students with skills and ability to locate and keep a job. This module involves the student in preparing job application forms, writing personal resumes and letters, and interviewing for hypothetical and actual jobs. Students also will be involved in situations where work habits, daily routine, and other aspects of jobs will be reviewed.

Title - Securing Employment-Employee Responsibilities (cont'd)

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Determining Qualifications for Jobs	2	2
2 Applying for a Job	4	17
3 Selecting a Job	1	4
	7	23

Title - Buying and Selling Agricultural Products *Code* - 01.0208-01

Description

Buying and selling agricultural products is a complicated and basic part of any agricultural supplies and services curriculum. Students will be involved in laboratory situations where they will price and hedge agricultural products and examine product supply and demands. Student will be expected to outline functions of marketing of certain products and explain vertical integration. Field trips and other visuals are to be used extensively.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Supply and Demand	4	4
2 Functions of Marketing	2	2
3 Prices and Futures Trading	4	4
4 Margins, Markups, and Pricing	2	4
5 Vertical Integration	2	2
	14	16

Title - Farm, Home, and Garden Supply Sales *Code* - 01.0208-02

Description:

This module will provide students with a knowledge of the wide variety of miscellaneous small equipment and supplies sold by many agricultural supply firms. While a complete sales technique is not stressed, the overall objective is to make the student better able to perform sales of these miscellaneous items. The module Agricultural Product Salesmanship should be completed, preferably prior to this module. Reference to other modules also is made. This module can provide a maximum of individual self study rather than shared class activities.

Title - Farm, Home and Garden Supply Sales (cont'd)

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Miscellaneous Products Carried	8	12
2 Services Provided	2	4
3 Using Product Catalogs	2	2
	12	18

Title - Sales of Petroleum Products and Accessories *Code* - 01.0210-01

Description:

Students with career aspirations in the agricultural products sales field should complete this module. The student will demonstrate knowledge and appropriate use of fuels, tires, and accessories used on the farm and in related enterprises. Students will also become involved with determining correct lubricants, greases, and oils under simulated and actual situations. Considerable time will be spent in field activity concerning the application of sales techniques and practices.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Tractor and Equipment Fuel	4	2
2 Oils and Other Lubricants	2	6
3 Tires for Farm Vehicles	2	3
4 Accessories	2	3
5 Sales Techniques	2	4
	12	18

Title - Organizational Patterns in Agricultural Businesses *Code* - 01.0211-01

Description:

Students will study business organization patterns developed in America. Field trips to the different types of businesses and to a brokerage firm will be included. Students will develop basic plans for initiating each major type of business and record functions of management and other employees. Through simulated activity, students will be involved in activities of a stock broker and stock holder.

Title - Organizational Patterns in Agricultural Businesses (cont'd)

Divisions or Units of Content	*Time Allocation* Class	Other
1 American Profit System-Functions and Purposes	4	3
2 Types of Business Organizations	4	8
3 Stock Market Operations	2	5
4 Resources Needed to Establish a Business	2	2
	12	18

Title - Cooperatives in Agriculture *Code* - 01.0211-02

Description:

Farmer cooperatives are an extremely important segment of agricultural business in the United States. In this module, students will study the kinds of farmer cooperatives, how they are organized to conduct business and their uniqueness as business concerns. The local community will serve as a valuable laboratory for student exploration of cooperatives. A number of student activities are recommended with views toward future employment in a cooperative or future membership in cooperatives.

Divisions or Units of Content	*Time Allocation* Class	Other
1 Basic Cooperative Features	2	4
2 Benefits of Farmer Cooperatives	1	4
3 Development of Farmer Cooperatives	1	1
4 Business Nature of Farmer Cooperatives	8	9
	12	18

Title - Finance and Credit Systems for Agricultural Businesses *Code* - 01.0211-03

Description:

This module is concerned with problems in financing agricultural businesses and the use of customer credit as a business management tool. Students will learn the sources and types of capital and credit, how to apply for a loan, to compute the cost of a loan and the repayment ability of a business. They will learn the problems in using customer credit and how to record credit sales, the accounting needed, and some ways of collecting credit accounts. Community resources such as financial institutions and agricultural business firms are an invaluable aid to utilize with this module.

Title - Finance and Credit Systems for Agricultural Businesses (cont'd)

Divisions or Units of Content	*Time Allocation* Class	Other
1 Financing Agricultural Businesses	12	12
2 Customer Credit	2	4
	14	16

Title - Insurance for Agricultural Businesses *Code* - 01.0211-04

Description:

Students will study and prepare insurance programs for agricultural businesses common to their local situation. Field trips to agencies, farms and businesses will be planned, conducted and evaluated by students. State insurance regulations will be studied with students preparing materials for class and community programs.

Divisions or Units of Content	*Time Allocation* Class	Other
1 Insurance for Producers of Agricultural Products	1	2
2 Life, Health, and Accident Insurance	4	4
3 Workmen's Compensation	2	2
4 Other Insurance	5	10
	12	18

Title - Income Taxes in Agriculture *Code* - 01.0211-05

Description:

People associated with production agriculture have been involved with taxes of one form or another since the inception of the tax system. Students will be involved with both actual and simulated situations where tax forms will need to be correctly completed. State and Federal experts will be invited to provide knowledge to students about income taxes. Much of the laboratory time will be spent visiting businesses and working out tax problems.

Title - Income Taxes in Agriculture (cont'd)

Divisions or Units of Content	*Time Allocation* Class	Other
1 Uses of Income Tax Money	1	3
2 Income Tax Forms	1	2
3 The Need for Complete Records	1	3
4 Tax Tables	1	2
5 Filing Income Tax Returns	1	15
	5	25

Title - Legal Aspects of Agricultural Business *Code* - 01.0211-06

Description:

This module deals with some of the legal concerns of importance to agricultural businesses. Students will learn the essentials of a valid contract and review various kinds of contracts. They will learn to write checks and other forms used in keeping checking accounts. The very important concern of public and product liability is reviewed with many opportunities for student activities involved. Finally, some of the local, State, and Federal regulations will be studied, with students sharing new knowledge with their classmates.

Divisions or Units of Content	*Time Allocation* Class	Other
1 Contracts	2	4
2 Negotiable Instruments	2	4
3 Public and Product Liability	2	8
4 Government Regulations	2	6
	8	22

Title - Personal Financial Planning *Code* - 01.0299-01

Description:

Students will involve themselves with planning short, intermediate, and long-range personal budgets; initiating and using checking and savings accounts; and preparing plans for installment buying. Students will also study and prepare reports of banking operations and other financial institutions.

Title - Personal Financial Planning (cont'd)

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Budgeting and Planning	4	6
2 Financial Records and Accounts	4	2
3 Buying and Borrowing	6	8
	14	16

Title - Computations in Agriculture *Code* - 01.0299-02

Description:

Emphasis will be placed on mastering the basic skills in agriculture mathematics which can be used to solve practical agricultural problems.

Students will perform the measurement and other computational skills commonly used in agriculture. Time will be spent throughout the module solving agricultural problems relating to individual occupational goals.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Agricultural Measurement Skills	3	11
2 Agriculture Computational Skills	4	12
	7	23

Title - Communications in Agriculture *Code* - 01.0299-03

Description:

Every student enrolled in this module will develop an ability to converse on the telephone, present a rational discussion for a student and adult group, and prepare and present a radio topic. Students will also prepare business letters and a technical report. Use of various dictionaries, a thesaurus, and technical reports on agriculture will be stressed.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Speaking	4	11
2 Business Letters	3	6
3 Technical Reports	2	4
	9	21

agricultural mechanics

Title - Fundamentals of Ag Engines *Code* - 01.0301-01

Description:

This module acquaints the student with the various types of internal combustion engines and the interdependence of the component parts. The principles of oepration of 2- and 4-stroke cycle gasoline and diesel engines will be demonstrated and studied. The module will include the names and functions of parts as well as electrical, fuel, air, exhaust, and cooling systems operations. Lubrication will be included and the principles of diesel engines will be explored.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Two- and Four-Cycle Sequence	2	2
2 Components of Engines	3	4
3 Air, Fuel, and Exhaust Systems	2	2
4 Lubrication System	1	1
5 Electrical System	4	4
6 Cooling System	1	1
7 Diesel Principles	1	2
	14	16

Title - Small Engine Overhaul *Code* - 01.0301-02

Description:

The student, by mastering this module, will be able to do a major overhaul on standard small gasoline engines. He will learn the use of manufacturer's nameplate data such as model and serial numbers to find proper repair and service instructions in manuals and to order the correct replacement parts. He will learn to determine causes of poor operation and to correct them. This will include the complete teardown of the engine, measuring specifications, replacement of worn or faulty parts, reassembling the engine, and adjusting it for efficient operation.

Title - Small Engine Overhaul (Cont'd)

Divisions or Units of Content	*Time Allocation* Class	Other
1 Engine Identification	1	1
2 Air Cleaners, Carburetors and Carburetion	2	4
3 Engine Governors	1	2
4 Manual Cranking Systems		2
5 Magnetc Ignition Systems	2	4
6 Small Engine Overhaul	2	7
7 Small Engine Troubleshooting		2
	8	22

Title - Small Gas Engine Service *Code* - 01.0301-03

Description:

This module deals with the servicing and maintenance of small gas engines, including the initial servicing of a new engine, maintenance in regular use, and preparation for storage. Both 2- and 4-stroke cycle engines will be included. The student will learn to determine the causes of the more common operating troubles, and to correct them. Another module will deal with the more serious malfunctions and repairing of small engines.

Divisions or Units of Content	*Time Allocation* Class	Other
1 Engine Fundamentals	2	1
2 Servicing New Small Gas Engines Before Use	1	2
3 Maintaining and Regular Servicing of Small Gas Engines	2	8
4 "Troubleshooting" and Making Minor Repairs to Small Gas Engines	3	8
5 Off-Season Storage of Small Gas Engines	1	2
	9	21

Title - Lawn and Garden Tractors *Code* - 01.0301-04

Description:

Before delivery or operation of a new garden tractor, it should be properly assembled and serviced. Students will learn proper assembly, fueling, and lubricating as well as the checking of safety devices and operation. The students will perform the required maintenance service, routine repairs, and operating adjustments on both new and used tractors.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Assembly and Pre-Delivery Service	2	6
2 Safety Rules and Tractor Operation	1	2
3 Fuels, Lubricants, Lubrication and Maintenance Service	2	8
4 Troubleshooting	1	5
5 Preparing Tractor for Storage	1	2
	7	23

Title - Tractor Service *Code* - 01.0301-05

Description:

The purpose of this module is to develop the students' ability to properly service a tractor. This service procedure consists of proper care and maintenance from the time a unit is purchased from a dealership to the day the unit is traded in, sold, or junked. It will include daily and periodic servicing of the chassis, engine, power train, hydraulic system, and other accessories. It will also involve the student in maintaining a service record of vehicles. This maintenance procedure will utilize as guides, manufacturer's owner's and service manuals. As a result, the student will be capable of performing the actual service in addition to maintaining service records on agricultural tractors.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Maintenance Record Form	1	1
2 Chassis	1	2
3 Lubrication	2	4
4 Air Induction System	1	1
5 Cooling System	1	1
6 Electrical System	3	6
7 Fuel System	1	2
8 Other Systems	1	2
	11	19

Title - Tractor Engine Tune-Up *Code* - 01.0301-06

Description:

The student will develop an effective, systematic procedure to follow in "checking out" a tractor engine, and will learn the technical knowledge and abilities necessary to make the needed adjustments. He will gain experience in the use of electronic test equipment, the operation and use a dynamometer for determining the malfunction and inefficiency of the engine. Tests and adjustments will be made to the air, exhaust, ignition, fuel, lubrication, cooling, and electrical systems.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Introduction to Tune-Up	1	3
2 Visual Inspection	1	3
3 Dynamometer Test	1	3
4 Tune-Up Procedures	4	14
	7	23

Title - Tractor Engine Top Overhaul *Code* - 01.0301-07

Description:

This module is designed to involve the student in step by step procedures used in completing an engine valve job. Students will demonstrate the importance of cleanliness required to successfully repair a mechanical assembly. Students will also utilize engine manufacturer's specifications to properly diagnose required repairs, repair components to proper dimensions, make decisions of necessary parts replacement, and adjust components to specified tolerance. These students will perform post-repair tests to tune up an engine to obtain maximum efficiency.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Diagnostic Test Procedures	1	4
2 Head Disassembly	2	2
3 Head Inspection	1	1
4 Valves, Guides, and Seats	2	5
5 Valve Train	1	3
6 Reassembly Procedures	3	5
	10	20

Title - Tractor Fuel Systems (Non-Diesel) *Code* - 01.0301-08

Description:

The student will adjust and repair gasoline fuel systems. He will become familiar with the common types of carburetors and the functions of the various parts, as they affect the efficient operation of the tractor engine. In addition to carburetors, he will service and correct problems that may arise in air cleaners, fuel pumps, fuel filters, sediment bowls, and fuel lines. The student will spend most of his time in shop performing actual service and repair operations. Modern equipment will be used.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Troubleshooting the Fuel System	2	3
2 Principles of Carburetion	1	1
3 Carburetor Components	1	2
4 Tuning Carburetors	2	3
5 Servicing Governors	2	4
6 Replacing Fuel System Parts	2	6
7 Testing Output (Dynamometer)		1
	10	20

Title - Tractor Engine Fuel System (Diesel) *Code* - 01.0301-09

Description:

The purpose of this module is to familiarize the student with the diesel fuel system used on today's agricultural tractors and power units. This will include four types of basic combustion chambers and various combinations of fuel injection pumps and injectors. The student will have an opportunity to identify the components of these pumps and injector nozzles. In addition, he will have the opportunity to disassemble, clean, and reassemble both pumps and nozzles. Following reassembly, the assemblies will be installed on test stands for final proper adjustment per manufacturers' specifications.

Another phase of this module involves the actual troubleshooting of a diesel fuel system on a live unit. This will involve testing the unit on a dynamometer, diagnosing the problem, correcting the malfunction per manufacturers' specifications, and retesting the performance of the unit on the dynamometer.

Title - Tractor Engine Fuel System (Diesel) (Cont'd)

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Principles of Diesel Engine	1	1
2 Components of Diesel Fuel System	2	1
3 Diesel Combustion Chambers	2	1
4 Diesel Fuels	1	1
5 Injector Nozzle	3	6
6 Injection Pumps	3	8
	12	18

Title - Tractor Engine Ignition System *Code* - 01.0301-10

Description:

This module is designed to orient the student to the functions of the ignition system. He will identify these components, explain their operational function, and perform diagnostic tests to determine if they are properly functioning. The student will perform proper maintenance procedures on the components when required. This will include magneto and battery ignition system.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Identifying Components	2	3
2 Troubleshooting a Distributor	2	4
3 Selecting Spark Plugs	1	2
4 Servicing and Repairing a Magneto	2	4
5 Troubleshooting an Ignition Unit	2	8
	9	21

Title - Tractor Engine Overhaul - Disassembly *Code* - 01.0301-11

Description:

This module will involve the student with removal of the engine from the tractor, tearing down the engine, and inspecting all parts for wear or damage. Included will be removal of the flywheel, clutch, pistons, cylinder sleeves, and camshaft. The student will learn to determine repairs needed and will prepare a list of needed parts.

Title - Tractor Engine Overhaul - Disassembly (Cont'd)

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Remove Engine From Tractor and Mount on Repair Stand (remove pan, oil pump)		3
2 Remove and Inspect Flywheel and Clutch	1	2
3 Piston Removal	1	3
4 Inspect and Service Piston Pins and Connecting Rods		6
5 Determine Cylinder Condition	1	2
6 Remove and Measure Crankshaft	1	3
7 Sleeve Removal	1	2
8 Camshaft Removal and Service	1	2
9 Clean Engine Block, Check for Cracks and Distortion		1
	6	24

Title - Tractor Engine Overhaul - Reassembly *Code* - 01.0301-12

Description:

In this module, the student will install needed new parts and reassemble the engine bushings, and gaskets. He will overhaul and reinstall the oil pump, replace the head and valve train. He will reinstall the distributor, generator, starter, manifold, and other engine parts. When the engine is properly reassembled, the student will adjust it for optimum operating efficiency, using a dynamometer and electronic testing equipment. The tractor will then be field tested and rechecked to manufacturers' specifications.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Install Camshaft and Bushings and Cylinder Sleeves	1	4
2 Install Crankshaft, Timing Gear Cover, and Pulley		4
3 Install Pistons on Connecting Rod, Insert in Cylinder Bore	1	4
4 Overhaul and Install Oil Pump, Install Oil Pan	2	3
5 Install Flywheel and Clutch		2
6 Install Head, Valve Train, Distributor, Generator, Starter, Manifold, and Other Engine Parts	1	2
7 Tune-Up, Break-In		6
	5	25

Title - Agricultural Power Trains *Code* - 01.0301-13

Description:

The complexity of agricultural equipment makes it essential for the student to study power transmissions and mechanical driving systems. Both wheel and crawler tractors can be used to study components, systems, and operation. Through demonstration and practice, students will learn the principles and mechanics of the operation of clutches, transmissions, torque and hydraulic drives, differentials, final drives, and power-take-offs.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Principles of Power Trains	1	1
2 Clutches	1	4
3 Transmissions	1	6
4 Differentials	1	6
5 Final Drives		2
6 Brakes		4
7 Power Take-Offs	1	2
	5	25

Title - Farm Machinery Operation, Maintenance, and Field Repairs *Code* - 01.0301-14

Description:

This module is designed to prepare the student to safely operate common farm machinery. Theory of operation will be included to the extent necessary to make the adjustments and field repairs for efficient operation under farm conditions. Most of the time will be spent developing skills of operating machinery.

Preventative maintenance and its importance will also be stressed in the module. The emphasis will be on spending a little time before operation to save countless hours of lost time later.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Machinery Operation Safety	2	1
2 Performing Maintenance and Field Repair	1	9
3 Operating Farm Machinery	1	16
	4	26

Title - Setting Up Agricultural Machinery *Code* - 01.0301-15

Description:

Students will demonstrate an ability to correctly assemble new equipment and prepare it for sale and delivery. Efficient assembly procedure and techniques within the limits of quality control and safety will be stressed in this module. Students will be involved with hardware identification and parts layout. Correct installation and alignment of pulleys and belts, chains and sprockets, and shafts and gears will be covered.

Proper adjustment, correct lubrication and predelivery service in the shop and under field conditions will be emphasized.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Assembly Manual Use	1	1
2 Hardware Identification and Terminology	1	2
3 Techniques of Machine Assembly	1	16
4 Check of Common Assembly Errors	1	1
5 Lubricants and Lubrication	1	1
6 Predelivery Service	1	3
	6	24

Title - Agricultural Equipment Repair *Code* - 01.0301-16

Description:

Experience in the service, adjustment, and simple repair of common agricultural equipment will be basic to this module. Classwork will involve suitable texts and how-to-do visuals. The student will become familiar with the tools appropriate for such repair on a farm or other agricultural establishment.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Determining Machine Components and Specifications	2	1
2 Cleaning Machine Prior to Repairs		1
3 Reconditioning the Machine		18
4 Servicing the Machine	1	2
5 Running-in the Reconditioned Machine		1
6 Painting the Machine	1	2
7 Cutting Cost of Repairs	1	
	5	25

Title - Agricultural Hydraulic Systems *Code* - 01.0301-17

Description:

This module is designed to orient the student on the broad and complex subject of hydraulic systems. The student will identify sophisticated components, explain their operation, and develop an ability to efficiently and accurately troubleshoot malfunctions. He will efficiently utilize test equipment to pinpoint the location of malfunctions. After locating the malfunctioning component, he will accurately repair the assembly.

Due to the complexity of the hydraulic components, each manufacturer utilizes unique designs. These designs require specific procedures to follow in order to correctly and efficiently disassemble and reassemble components. For disassemble and reassemble procedures and specifications one should refer to the Manufacturer's Shop Manual.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Principles of Hydraulics	1	1
2 Identifying Components and Functions	6	3
3 Pretesting Procedure	1	2
4 Testing Procedure	2	8
5 Repairing Components		6
	10	20

Title - Tillage Equipment *Code* - 01.0301-18

Description:

This module will enable the student to understand the operation, service, adjustment, and repair of common tillage equipment. Students will perform skills in the shop and in the field using operating and service manuals and suitable shop tools or equipment.

They will learn to correctly hitch the equipment to the tractor and to properly adjust the hitch. Included will be practice on various types of moldboard and disc plows, harrows, field cultivators, rollers, and other specialized tillage equipment.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Types of Tillage Equipment	1	1
2 Parts Identification	1	2
3 Types of Hitches and Hitching	1	2
4 Use of Operators and Service Manuals	1	1
5 Adjusting Tillage Equipment	1	12
6 Troubleshooting and Storage	1	6
	6	24

Title - Planting, Spraying, and Fertilizing Equipment *Code* - 01.0301-19

Description:

This module is designed to provide the student with the understanding, skill, and ability to select, operate, adjust and maintain equipment which is used to plant seed, apply chemicals, and distribute fertilizers. Servicing and repairing of manure spreaders is also included.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Crop Planting Equipment	2	8
2 Spraying and Dusting Equipment	2	6
3 Fertilizing Equipment	3	9
	7	23

Title - Hay and Forage Equipment *Code* - 01.0301-20

Description:

This module will include maintenance, operation, repair, and adjustment of common hay and forage equipment. Mowers, hay conditioners, rakes, balers, forage harvesters, and forage wagons are some of the equipment to be covered.

It is deemed most wise to use the operator's and manufacturer's service manuals as the basic repair and adjustment references.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Mowers	1	5
2 Conditioners	1	4
3 Rakes	1/2	2
4 Balers	1 1/2	5
5 Forage Harvesters	1	5
6 Forage Blowers	1/2	1
7 Forage Wagons	1/2	2
	6	24

Title - Grain Harvesting Equipment *Code* - 01.0301-21

Description:

This module deals with the operation, service, and repair of the combine. Students will study the development, types, and principal operations, of the machine and determine the advantages and disadvantages of each. Using actual machines, the student will adjust, service, and repair this equipment. Troubleshooting procedures for correcting malfunctions will be included.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Development of the Combine	1	
2 Basic Design of Combine	1	1
3 Principle Units and Functions	1	2
4 Adjusting and Operating		10
5 Servicing and Repairing	2	12
	5	25

Title - Agricultural Equipment Accessories *Code* - 01.0301-22

Description:

Organized instruction in the installation, maintenance, and repair of agricultural equipment accessories will be included in this module. These learnings will relate to the needs of an agricultural dealership.

The instructor will select the agriculture equipment accessories for his location. He must also determine if safety, electrical, and hydraulic review must be covered in class before working on the accessories selected.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Agriculture Equipment Accessories	3	27

Title - Materials Handling Equipment *Code* - 01.0301-23

Description:

This module will familiarize the student with common types of materials handling equipment in agricultural enterprises. Stress will be on the proper selection, installation, use, and maintenance of such equipment. When possible, students will gain practical experience in these three activities. He will develop plans for needs of such equipment, including costs, for a given situation. Involved will be such equipment as blowers, unloaders, conveyors, and barn cleaners.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Blower and Elevators	3	6
2 Conveyors	1	4
3 Bunk Feeders	1	4
4 Barn Cleaners	1	4
5 Manure Handling	2	4
	8	22

Title - Lawn and Garden Equipment *Code* - 01.0301-24

Description:

This module is designed to acquaint the student with the setup, adjustments, repair, and operation of lawn and garden equipment. Equipment such as lawn mowers, tillers, fertilizer spreaders, sprinklers, and snow blowers will be used. He will become familiar with the common types of transmissions, clutches, and drives, and will learn to adjust and repair them.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Types	1	2
2 Setup, Adjustment, and Lubrication	3	8
3 Drive Mechanisms	1	3
4 Special Cutting Mechanisms	1	4
5 Equipment Operation	1	6
	7	23

Title - Light Earthmoving Equipment Repair and Maintenance

Code - 01.0301-25

Description:

This module will provide basic training in the repair and maintenance of light earthmoving equipment commonly used in logging, soil conservation, farming, and ornamental horticultural operations. Such items as the bulldozer, backhoe, and log loader will be serviced. Also included will be forklifts such as are used in agricultural storages.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Track and Roller Repair and Maintenance	1	7
2 Steering Clutches and Brakes	1	6
3 Shuttle Clutches and Direction Reversers	1	4
4 Hydraulic Systems	1	9
	4	26

Title - Milking Equipment

Code - 01.0301-26

Description:

Students involved in this module will be exposed to the machinery and equipment involved with the production and handling of milk. Students will identify milking and milk handling equipment as well as laying out the several systems of milk handling. Pumps, lines, and machines will be disassembled, repaired, and reassembled by students. Much of the student's time will be spent in analyzing the several systems of milk handling via field trips.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Machine Milking Development	1	3
2 Milking Machines	1	6
3 Vacuum Systems	1	4
4 Electrical System	1	2
5 Milking Systems	1	3
6 Milk Hauling	1	6
	6	24

Title - Farm Tractor and Vehicle Operation *Code* - 01.0301-27

Description:

This module is designed to prepare the student to operate farm tractors and vehicles safely and efficiently. Theory of operation will be included to the extent necessary to make the adjustments and repairs needed for safe and efficient operation under farm conditions. Most of the module will involve development of skills needed for operation.

Preventive maintenance and its importance will also be stressed in this module. Emphasis will be on spending a little time before operation to save countless hours of lost time later.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Tractor and Vehicle Operation Safety	2	2
2 Performing Maintenance and Pre-operation Jobs	1	6
3 Operating Tractors and Vehicles	2	17
	5	25

Title - Tractor Starting and Charging Systems *Code* - 01.0301-28

Description:

The purpose of this module is to acquaint the student with the various types of starting and charging systems used on today's agricultural tractors. It will acquaint him with the fundamentals of electricity, its terminologies, and how it is used to perform specific jobs in the starting and charging system. He will be involved with actual components, dismantling, testing, reassembling, and testing complete assemblies. These tests will be compared with manufacturers' specifications to determine required additional service. During this procedure he will become acquainted with proper test equipment. He will also be required to perform preventative maintenance on the components of both systems.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Electrical Theory	4	1
2 Electric Storage Battery	2	1
3 Charging System	5	10
4 Starting System	3	4
	14	16

Title - Planning Agricultural Structures and Service Facilities

Code - 01.0302-01

Description:

This module is concerned with the selection and planning of suitable buildings and types of construction for specific agricultural purposes. Included will be building materials and methods, construction standards, site suitability and preparation, and cost estimates. Remodeling of existing buildings will be considered. The student will prepare sketches of an agricultural structure, including site layout and the location of equipment, water, light, and electrical outlets. Construction skills are included in other modules.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Determining Structural Needs	4	4
2 Determining Construction Types, Materials, Sizes, and Site Location for Specific Purposes	6	6
3 Drawing Scale Plans for a Specific Building	2	8
	12	18

Title - Construction and Improvement of Agricultural Structures

Code - 01.0302-02

Description.

This module is concerned with the actual construction or improvement of an agricultural structure. Given a site, a plan, and a bill of materials, the student will perform the actual construction, starting with a foundation and completing with the application of an exterior preservative.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Review Construction Terms, Building Plan, Bill of Materials, and Tools Needed for Construction	2	
2 The Construction of a Pier Foundation		6
3 The Construction of the Floor		
4 The Construction of the Roof	1 1/2	5
5 The Construction of the Exterior Walls	1	8
6 The Painting of the Structure	1/2	2
	5	25

Title - Shop Management and Equipment Utilization *Code* - 01.0305-01

Description:

This module endeavors to orient the students to the pattern that they will follow throughout the year. If this is well done, the interest of the student is aroused and motivated to make him become all he is capable of being. He will be introduced to the safe and proper use of power and hand tools in the shop. He will also learn to properly care for and maintain these tools as well as identify them. This will include proper storage, accounting, and maintenance of tools, supplies and materials, parts, and other pieces of shop equipment.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Organizing and Maintaining the Shop	2	3
2 Shop Safety	1	3
3 Tools and Equipment	3	5
4 Materials and Supplies	2	4
5 Work Routine and Discipline	2	5
	10	20

Title - Basic Agricultural Welding *Code* - 01.0305-02

Description:

Skills will be developed for the simple welding needed on the farm or in the equipment dealership, around a nursery, in greenhouse operation, or in connection with many conservation activities. The student will set up and operate both arc and gas welders and will gain basic proficiency in making welds in the flat and horizontal positions. He will learn and use safe procedures and precautions in all activities. This module will provide the foundation for further instruction in welding or for individual development for those who need greater proficiency.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Arc Welding, Safety, Equipment, and Supplies	3	2
2 Basic Procedures and Patterns	2	4
3 Oxy-Acetylene Equipment	1	5
4 Flat Position Welding	1	12
	7	23

Title - Advanced Agricultural Welding *Code* - 01.0305-03

Description:

Building upon basic skills previously acquired, this module emphasizes further development of skills in welding and their practical application to agricultural equipment. Included will be vertical and overhead arc welds as well as heating, bending, brazing, hardsurfacing, and soldering. Safety for the operator and others will be stressed.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Selection of Electrodes	1/2	1
2 Evaluating Welds	1/2	2
3 Overhead and Verticle Welding	1	9
4 Welding Cast Iron	1	3
5 Hardsurfacing and Padding Metal	1	4
6 Heating and Bending Metal	1	2
7 Soldering and Brazing Metal	1	3
	6	24

Title - Agricultural Machinery Painting *Code* - 01.0305-04

Description:

This module is designed to expose the student to the various types of painting equipment required to properly apply paint to machinery. The student will prepare a machine for painting. He will select the proper paint, primer, and thinner that are compatible. The procedures followed will illustrate to the student safe procedures required when painting. In addition to actual painting, he will maintain the equipment to insure long life of the equipment plus being in operational condition the next time the equipment is to be used.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Introduction to Painting Equipment	3	6
2 Servicing Equipment	1	2
3 Preparation of Machine To Be Painted		8
4 Selecting Proper Paint and Preparing for Application	1	2
5 Applying Paint, Trim and Decals	1	6
	6	24

Title - Planning, Layout and Fabrication of Custom Equipment — *Code* - 01.0306-01

Description:

Shop modification of agricultural equipment, and the construction of simple equipment to meet special needs will be the activities in this module. Analysis of special problems and the making of sketches and layouts will include welding, cutting, drilling, and other machine operations. Tryout and modification of the finished product will be used in testing the job.

Divisions or Units of Content	*Time Allocation* Class	Other
1 Develop Possible Solution	2	
2 Sketch the Idea on Paper		2
3 Make, Build, Assemble, or Construct		24
4 Demonstrate the Workability of the Finished Product		2
	2	28

Title - Electrical Fundamentals for Agriculture — *Code* - 01.0307-01

Description:

Wiring systems studied in this module will include those used on a farmstead, in a greenhouse complex, in an agricultural equipment dealership, or a residence. Laboratory exercises will give the student experience in wiring simple circuits. The student will select the components to use and install them in a circuit for central lighting, heating, and motor loads. Standards of the National Board of Fire Underwriters will be adhered to.

Malfunctioning circuits will be studied to enable the student to locate the component that is malfunctioning and determine if he can fix it or if an electrician should be called.

Divisions or Units of Content	*Time Allocation* Class	Other
1 Making Electrical Measurements	1	4
2 Understanding the Electrical Distribution System	1	3
3 Installing Simple Circuits	1	7
4 Selecting Central Devices	3	6
5 Troubleshooting a Malfunctioning Circuit	1	3
	7	23

Title - Using Electricity In Agriculture *Code* - 01.0307-02

Description:

The student will learn how to select units for using electricity in agriculture for heat, light, and mechanical power. Students will be involved with selection of motors for specific purposes as well as maintenance procedures. Students will also be exposed to uses of electricity in heating. This will include maintenance of equipment, selection of equipment, and application of equipment. Selection and maintenance of proper lighting equipment will involve each student in appropriate activities.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Selecting and Maintaining Electric Motors	8	4
2 Selecting and Maintaining Electric Heat Units	4	3
3 Selecting and Maintaining Lighting Equipment	5	6
	17	13

Title - Managing Dealership Parts Department *Code* - 01.0308-01

Description:

This module is designed to acquaint the student with the complex duties of a dealership parts department. The student will become involved with inventory controls, the ordering and receiving of emergency and stock parts, marketing and advertising parts sales, and learning the needs and problems of the agricultural dealership customers. He will recognize the importance of the activities of the parts department and how they are dependent upon management and the service department. These activities will also coincide with the needs of the consumer.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 The Role and Requirements of a Parts Man	1	1
2 Inventory Controls	2	3
3 Ordering Procedure	2	3
4 Receiving, Checking and Verification	1	3
5 Merchandising Program	2	4
6 Effective Displays	1	4
7 Advertising	1	2
	10	20

Title - Managing an Agricultural Machinery Service Department

Code - 01.0308-02

Description:

There are three departments in a well balanced Agricultural Machinery Dealership - Service, Sales, and Parts. Each should make a profit for the dealer.

This module is designed to give a student some knowledge of managing an agricultural machinery dealer service department to make a profit for the dealer and protect customer investment.

In this module there are units of study on profit analysis, management control, flat rate, machine earnings, scheduling work, job tickets, pre-delivery and delivery service, service department layout, foreman's desk, and library.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Service Department Personnel	5	3
2 Service Department Layout and Planning	3	4
3 Service Record Keeping	3	8
4 Special Activities	2	2
	13	17

ornamental horticulture

MODULES OF INSTRUCTION IN ORNAMENTAL HORTICULTURE

Title - Climbing, Limbing, and Felling *Code* - 01.0501-01

Description:

This module considers the estimating costs in safely pruning and felling trees located on landscaped residential, industrial, and public lands. Students develop skills in limbing and preparing trees for felling. Special skills such as selecting areas of trees to remove and cutting trees with power chain saws are developed by students. Knowledge and skills in the use of clippers, saws, pruners, chain saws, ropes, power stump removers, chippers, and lawn vacuum cleaners are developed by students in removing trees, stumps, and debris from property.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Estimating Costs of Tree Surgery	1	3
2 Tools and Equipment Used in Tree Surgery	1	3
3 Methods of Tree Climbing	1	4
4 Removing Major Limbs from Trees in Preparation for Felling and/or Disease Control	1	8
5 Felling and Removing Trees, Stumps, and Debris		8
	4	26

Title - Pruning Ornamentals *Code* - 01.0501-02

Description:

The student will be familiar with a plants growth cycle and plant parts. He will become acquainted with the common pruning tools, their purpose and use. During field trips the student will be able to identify ornamental plants. The student will be able to differentiate between properly and improperly maintained plantings. He will discuss and identify natural forms as well as disciplined forms used in landscaping. In visiting various landscape plantings, the student will be able to identify the design objective and prune the planting to accomplish the intended objective.

Title - Pruning Ornamentals (cont'd)

Divisions or Units of Content	*Time Allocation* Class	Other
1 Identification and Understanding the Various Parts of a Plant and Their Function, Understanding the Growth Cyles of Plants	1	2
2 Identification of the 4 Major Classification of Ornamental Woody Plants	1	2
3 Recognizing Natural Plant Forms and Their Relative Forms and Size Within a Landscape	2	3
4 Pruning Tools and Their Use		9
5 Objectives and Timing of Pruning, Demonstrating Pruning Skills	1	9
	5	25

Title - Floral Design and Construction *Code* - 01.0502-01

Description:

Students enrolled in this module will identify the common types of flowers and floral materials used in construction of arrangements and corsages.

The module includes proper methods of caring for cut flowers and foliage after receiving them from floral wholesalers. Selection of storage containers, refrigeration temperature, and special treatment for various types of plant material is included.

Each student will develop skills in using the florist knife, scissors, pliers, and materials such as floral tape and floral arrangement holding materials.

Following basic use of hand tools, student will learn to construct vertical, crescent, horizontal, and similar floral arrangements of basic types with emphasis on the local market for such designs.

In addition, students will construct corsage frames, learn to tie corsage bows, and assemble single flower, spray, double spray, and wrist type corsages.

Divisions or Units of Content	*Time Allocation* Class	Other
1 Identifying and Handling Floral Materials	2	3
2 Basic Corsage Design	3	7
3 Basic Floral Design	4	11
	9	21

Title - Funeral Spray and Wreath Construction *Code* - 01.0502-02

Description:

The student will be able to identify, wire, and pick flowers for funeral work; as well as cut styrofoam to form a spray bar. Also included will be the identification of greens and greening a spray bar.

The module contains the placement of flowers, and the use of a bow or a banded bow in a spray and wreath.

The selection of the proper card, as well as filling in card and envelope, is found within this module. Student will also make use of ribbon in funeral spray work.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Identifying Flowers and Materials	2	2
2 Sprays	2	10
3 Wreaths	3	11
	7	23

Title - Funeral Designs *Code* - 01.0502-03

Description:

Student will be involved in making basic form for casket covers using live floral materials.

Also student will construct special cross, heart, pillow, and rosary floral arrangements.

Methods of pricing funeral arrangements according to local conditions are included in the module.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Basic Casket Covers	3	7
2 Funeral Tribute Construction	5	15
	8	22

Title - Simple Wedding Design *Code* - 01.0502-04

Description:

The student will be able to identify various flowers such as stephenodis, roses, orchids, daisies, carnations, pompons; to construct wedding design of nosegay, simple cascade, colonial, and prayer book bouquets.

Correct methods of wiring and care of the flowers, as well as taping use of greens and nettings is included. The experience of finishing off the bouquet with a bow or bow and streamers and care of bouquet before delivery is provided students.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Identifying Flowers and Greens	2	2
2 Conditioning Flowers	1	1
3 Wiring and Taping	1	2
4 Construction	4	19
	8	24

Title - Producing Christmas Decorations *Code* - 01.0502-5

Description:

The student will select various types of holiday greens used in assembling wreaths, grave sprays, crosses, swags, and garlands. Skills will be developed in producing these pieces on the correct frame or base. The identification of Christmas plants, how to dress each and wrap for delivery will also be included.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Identification of Materials and Frames	6	2
2 Construction		15
3 Potted Plants	2	5
	8	22

Title - Retail Flower Shop Operation and Management *Code* - 01.0502-06

Description:

In this module the student will study the operation and management of the retail flower shop including an actual experience of working in a retail flower shop under the supervision of the shop manager and the instructor.

The content will include shop layout and design, retail merchandising, and delivery of floral arrangements.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Retail Flower Shop	2	2
2 Merchanising Product	4	8
3 Labor Relations	2	
4 Applied Shop Management	2	10
	10	20

Title - Introduction to Growing Greenhouse Crops *Code* - 01.0503-01

Description:

This module engages students in review of common types of greenhouse structures and provides experience in locating greenhouses.

Correct methods for preparation of soils and controlling greenhouse environment through use of fans, CO_2 systems, and related equipment are included in the module.

Students are involved in preparing soil for bench and pot crops. Critical cultural operations such as watering, fertilizing and spraying greenhouse crops are included in the module. Students learn to operate water breakers and automatic watering systems needed to provide adequate moisture to greenhouse crops. Proper methods of liquid fertilizer proportioner operation to provide maximum growth and yield on a per-square-foot basis are also included in this module.

Students also will be involved in pinching, budding, lighting, and shading procedures according to greenhouse crop growing schedules.

Title - Introduction to Growing Greenhouse Crops (cont'd)

Divisions or Units of Content	*Time Allocation* Class	Other
1 Greenhouse Location, Structures, and Equipment	3	1
2 Cultural Requirements for Growing Greenhouse Plant Crops	3	1
3 Growing Selected Greenhouse Crops	3	
	2	21
	8	22

Title - Growing Bedding Plants *Code* - 01.0503-02

Description:

Skills will be developed in the selection of bedding plants, seeds, and varieties. The germinating from seed into marketable plants will also be included as skill development.

The operations will include the preparation of artificial mixes and the cultural practices used in growing bedding plants.

Divisions or Units of Content	*Time Allocation* Class	Other
1 Preparing soil and artificial mixes with a power mixer	1	2
2 Selecting and sowing seed varieties	1	4
3 Picking off seedlings and selecting containers	1	6
4 Watering and fertilizing practices	1	5
5 Cultural practices to produce marketable plants	1	8
	5	25

Title - Growing Specialized Greenhouse Holiday Crops *Code* - 01.0503-03

Description:

The production of highly specialized holiday crops such as poinsettias, tulips, azaleas, lillies, geraniums, and chrysanthemums require close crop scheduling and knowledge of consumer demands.

Students develop competencies in areas such as selection of holiday crop varieties, varying greenhouse environmental growth conditions according to specific varieties of plant materials, and scheduling crops for specific holiday periods.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Holiday Crop Varieties and Cultural Requirements	4	12
2 Production of Two Holiday Crops	2	12
	6	24

Title - Ornamental Horticulture - Landscape Design *Code* - 01.0504-01

Description:

The module emphasizes the importance of using basic landscape principles to provide desirable settings for the private residence and large public and private facilities.

Students learn to use the common landscape symbols and read scales accurately to determine location of plant material in landscape settings. Basic design characteristics such as harmony, balance, and unity are used by students to develop landscape plans for the public, service, and private areas of a landscape setting.

In completing landscape plans, students check for characteristics such as repetition, overall design, theme, and use of landscape structures such as fences, walks, and patios.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Reading Landscape Drawings and Using Basic Design Principles	2	6
2 Landscaping the Private Residence	1	6
3 Landscaping Large Properties	1	7
4 Completing the Landscape Plan	1	6
	5	25

Title - Constructing Landscape Features *Code* - 01.0504-02

Description:

Students will use concrete and asphalt working tools to construct various landscape features. Features to be developed are: patios, edgings, retaining walls, free standing walls, and steps. Each feature will be constructed of a different material so the student will gain a degree of proficiency in using concrete, asphalt, gravel, natural stone, brick, flagstone, and cement block. Emphasis will also be given to purchasing procedures for materials and tools.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Concrete Edging	1/2	2
2 Asphalt Walkway Construction	1/2	2
3 Stone Dry Wall Construction	1	6
4 Flagstone	1	3
5 Stair Construction	1	6
6 Free Standing Wall Construction	1	6
	5	25

Title - Indoor Landscaping *Code* - 01.0504-03

Description:

This module involves students in the review of the overall indoor landscape plan to provide information for selecting planters and plantings.

Students will assess the overall growing conditions that exist where plantings are made. Measurements will be made of light availability, temperature, and humidity conditions.

Emphasis is placed on the process of planting indoor herbaceous plants to produce a pleasing grouping of plant material. Students enrolled in the module develop skills in using various types of mulches and additional ornamentation to the landscape planting providing added interest.

Laboratory activities such as landscaping and preparation for shopping malls and planting take place in similar locations that have large enclosed areas with extensive indoor landscaping.

Title - Indoor Landscaping (cont'd)

Divisions or Units of Content	*Time Allocation* Class	Other
1 Selecting Indoor Landscape Containers for Various Planting Situations	2	8
2 Planting Indoor Plants in Landscape Settings According to Landscape Plans, Plant Growth Characteristics, and Related Factors	3	17
	5	25

Title - Identifying and Using Indoor Foliage Shrubs *Code* - 01.0504-04

Description:

Students enrolled in this module will develop skills in selection of common indoor foliage plants for both large landscape settings and small dish gardens.

Student selection of plant material is based on specific characteristics of indoor plants such as leaf arrangements, size and shape of plant, color, and temperature and light requirements.

In the process of selecting plant materials to be used in various indoor landscape settings, students will develop the skills required to select a grouping of plant materials that would be suitable for a specific set of indoor growing conditions.

Divisions or Units of Content	*Time Allocation* Class	Other
1 Identifying and Using Specimen Plants	2	13
2 Use and Common Characteristics of Dish Garden Plants	2	13
	4	26

Title - Implementing Landscape Plantings *Code* - 01.0504-05

Description:

This module is designed so that the student will learn how to follow a landscape plan and actually establish the plant and structural materials on the site.

Students will prepare the location while they select, assemble, and transport the materials to the site. Laboratory activities will take place in the school land lab or a private residence setting.

Divisions or Units of Content	*Time Allocation* Class	Other
1 Identification of the Symbols Listed on a Landscape Plan	1	2
2 Location of Trees and Shrubs and Circular, Straight Line and Irregular Shaped Plant Beds or Landscape Feature	1	4
3 Idertifying, Selecting, Assemblying, and Trarsporting of Landscape Materials to a Site	1	2
4 Idertification of Soil Constitutents Needed to Prepare a Site for Landscape Planting	1	1
5 Plarting Trees and Shrubs	3	10
6 Preparing, Planting, and Finishing Plant Beds	-	4
	7	23

Title - Maintaining Woody Shrubs in the Landscape *Code* - 01.0504-06

Description:

Students will develop skills of pruning, fertilizing, cultivating and applying pesticides to woody plants and small trees.

Equipment that students will be expected to operate include: pruning tools, sprayers, fertilizer broadcasters and cultivators. Much of the time will be spent in laboratory and on-sight activities.

Divisions or Units of Content	*Time Allocation* Class	Other
1 Pruning Woody Shrubs	2	8
2 Fertilizing Woody Shrubs	1	6
3 Cultivating Woody Shrubs	1	4
4 Applying Pesticides to Woody Shrubs	2	6
	6	24

Title - Identification and Landscape Use of Herbaceous Plants

Code - 01.0504-07

Description:

This module provides instruction in the identification of annual and perennial herbaceous plants. Students are involved in identifying herbaceous plants in landscape settings where they are normally used. The common names of herbaceous plants such as day lily, oriental poppy and iris are used in plant identification work.

Included in the landscape use of herbaceous plants portion of the module are features such as design of plant beds and borders in relation to height and color of plant materials. Emphasis is placed on creating special effects with herbaceous plants such as depth, uniformity, formality, and informality in landscape settings.

The herbaceous plant module involves students in proper planting procedures. Consideration is given to preparation of herbaceous plant beds and proper method of spacing and transplanting individual plants.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Identification of Herbaceous Plants	2	4
2 Landscape Use of Herbaceous Plants	2	4
3 Site Preparation	1	6
4 Planting, Tamping Soil, and Watering of Herbaceous Plants	2	9
	7	23

Title - Growing Nursery Plants

Code - 01.0505-01

Description:

This module involves the preparation, layout, and maintenance of nursery stock and growing areas. The nursery operations will include mechanical and chemical cultivation, fertilization, irrigation, spraying, pruning, and winter protection for nursery crops.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Layout and Planting Stock	2	8
2 Cultural Practices	5	10
3 Winter Protection	1	4
	8	22

Title - Asexual Plant Propagation *Code* - 01.0505-02

Description:

The student will be able to propagate woody plants, perennials, and foliage plants using common asexual techniques.

Cuttings, division, separation, layering, and grafting are included. The student will perform each of the above mentioned operations in plant propagation.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Cuttings		
a Herbaceous Stem Cuttings	1	1
b Leaf Cuttings	1	1
c Leaf Bud Cuttings	1	1
d Root Cuttings	1	1
e Soft Wood Cuttings	1	1
f Semi Hardwood Cuttings	1	1
g Hardwood Cuttings	1	3
2 Division		1
3 Separation		1
4 Layering	1	5
5 Grafting	1	5
	9	21

Title - Plant Propagation From Seed *Code* - 01.0505-03

Description:

The student will be able to propagate annuals, perennials, and woody plants from seed.

Included are: seed gathering, purchasing seed, seed treatment, extraction and cleaning, scarification, stratification, treatment with fungicide, preparation of a soil or artificial mix, seed germination, and transplanting.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Annuals and Perennials	4	11
2 Woody Plants	4	11
	8	22

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Title - Growing and Caring for Turf Grass *Code* - 01.0506-01

Description:

This module considers the basic preparatory and maintenance operations in turf grass culture and the preparation of soils for lawn seedbeds, the identification of grass seed and plants, the mixing of lawn seeds, and proper seeding methods.

In addition, irrigation and fertilization of grasses and disease control in turf and proper mowing are included.

Previous experience in general fertilization practices, soil tillage and knowledge of plant structure will prove beneficial to the student enrolling in the turf grass module. Field and laboratory activities should include the development of lawns, and the maintenance of turf areas. Areas such as land lab, school grounds, and turf plots within the area should be considered for field and lab activities.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Preparation of Lawn Seedbed	1	7
2 Selecting Appropriate Turf Grasses	2	2
3 Seeding Lawn Areas	1	4
4 Management and Renovation of Turf	2	6
5 Weeds, Disease, and Insect Control in Turf	1	4
	7	23

Title - Lawn Construction *Code* - 01.0506-02

Description:

This module will include all the basic steps necessary to construct a good turf foundation. The steps involve the application of materials, incorporation of material by rototilling, grading, seeding, watering, laying sod, and rolling. The student will be actively involved in each of these processes.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Application of Material	3	3
2 Rototilling	2	3
3 Grading	2	6
4 Seeding and Rolling	3	3
5 Laying Sod	1	2
6 Maintaining Sod	1	2
	12	19

Title - Greenskeeping *Code* - 01.0506-03

Description:

Students enrolled in this module develop skills in basic golf greens construction and maintenance of turf grass and greens areas.

The module places emphasis on the maintenance of greens through proper mowing, irrigation, and fertilization. The controlling of insects, diseases, and weeds for this special turf area is included.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Construction of Golf Greens	2	1
2 Maintenance of Golf Greens	6	21
	8	22

Title - Controlling Insects, Diseases, and Fertilization *Code* - 01.0599-01

Description:

This module involves the student in identifying the common characteristics of plant injury or disease and the organisms that cause plant damage.

Emphasis is placed on student ability to correctly identify insects, resulting plant damage, and environmentally safe controls. Students learn the proper use of sprayers and dusters in order to distribute chemical controls for plant insect and disease pests. In addition, insect sex attractants and other types of natural controls are considered in the module.

Students enrolled in this module also develop fertilizing programs for ornamental horticultural crops. Using information such as nature of fertilizer components, and types of fertilizers available, students select the most appropriate fertilizer for crop requirements and fertilizer application methods.

Title - Controlling Insects, Diseases, and Fertilization (Cont'd)

Divisions or Units of Content	*Time Allocation* Class	Other
1 Identifying Insects, Selecting and Applying Controls for Greenhouse Crops, Lawns, and Nursery Plants	4	8
2 Identifying Diseases, Selecting and Applying Controls for Greenhouse Crops, Lawns, and Nursery Plants	2	5
3 Fertilizers and Fertilizer Components - their relation to ornamental horticultural crop needs and application methods	2	9
	8	22

Title - Preparing and Maintaining Ornamental Horticulture Soils — *Code* - 01.0599-02

Description:

This module is concerned with the nature of the soils that are used to produce ornamental horticultural crops. Soil properties considered for this module include particle density, drainage, and texture.

The student is involved in testing soil for the amount of nutrients that are contained within various layers. Each student will obtain a composite soil sample and use special dyes to determine acidity of soil.

The module also provides instruction in methods of mixing peat moss, sand, and other inert materials to produce artificial soil mixes for flower, turf, and shrub crops.

This module also includes instruction in steam and electric sterilization of soils to be used in the greenhouse and fumigation of soils in turf and nursery crop production.

Instruction is also provided in the operation of roto tillers and hand tools, necessary to prepare soils for planting as well as to properly maintain established plantings.

Title - Preparing and Maintaining Ornamental Horticulture Soils (Cont'd)

Divisions or Units of Content	*Time Allocation* Class	Other
1 Testing Soil for Physical and Chemical Suitability for Ornamental Crops	2	7
2 Tilling and Mixing Soil in Greenhouse Benches, Lawn, and Nursery Areas With Hoes, Hand Cultivators, and Power Roto Tillers	1	7
3 Sterilizing Greenhouse Soils With Steam, Electrical, and Fumigant Techniques	2	11
	5	25

Title - Using Woody Plants In Ornamental Horticulture *Code* - 01.0599-03

Description:

The knowledge of common characteristics and uses of woody plants in landscaping grounds provides the basis for developing landscape plans for existing and planned building sites.

Students learn the basic terminology for plant parts necessary to identify plants with a plant identification key and on sight. Also students learn the characteristics of woody plants essential to use in the landscape.

Laboratory activities will take place in the school land laboratory and near by gardens and park areas.

Divisions or Units of Content	*Time Allocation* Class	Other
1 Basic Types of Woody Plants	1	
2 Identification of Plant Parts Using Proper Nomenclature	4	3
3 Identification of Woody Plants	5	7
4 Landscape Characteristics	1	9
	11	19

Title - Developing an Ornamental Business Location and Layout

Code - 01.0599-04

Description:

This module involves students in the assessment of factors that are responsible for success in the retail florist or nursery business. Students select various locations in their community that would be suitable for a retail florist or nursery business based on: traffic patterns, costs of land, tax rates and costs of building.

The interior of the retail florist and nursery shops are planned by students according to prime use of the area. Students planning interior layouts and sales areas adjacent to the retail building must plan for features such as refrigeration space, work areas, and retail display areas.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Planning Store Layouts for the Retail Flowershop and Retail Nursery	3	20
2 Redesigning and Improving Shop Layout for Greater Efficiency and Salesability	1	6
	4	26

Title - Preparing Nursery Stock for Sale

Code - 01.0599-05

Description:

In this module, the students will prepare nursery stock for marketing. They will dig, ball and burlap, grade and display conifer and deciduous nursery stock. Much time will be spent in the nursery on "learning by doing" activities.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Digging Nursery Stock	3	7
2 Grading Nursery Stock	3	5
3 Displaying Nursery Stock	4	6
4 Transporting Stock	1	1
	11	19

Title - Operation and Maintenance of Horticultural Equipment — *Code* - 01.0599-06

Description:

This module places emphasis upon the safe operation of commonly used ornamental horticultural equipment.

Students are involved in the safe operation of turf equipment, garden tractors, back hoes, buldozers, and greenhouse equipment such as ventilation systems and fertilizer injection systems.

In addition, students perform minor adjustments and maintenance operations of ornamental horticulture equipment. Adjustment of cutting height, ratio settings in fertilizer proportioning systems, and checking belt tensions in lawn and garden equipment are some of the operations performed by students taking this module.

Divisions or Units of Content	*Time Allocation* Class	Other
1 Operation of the Common Types of Ornamental Horticultural Equipment	2	13
2 Adjustment of Ornamental Horticultural Equipment	2	13
	4	26

Title - Scheduling Greenhouse Crop Production — *Code* - 01.0599-07

Description:

In this module, the students will make decisions which have extreme importance in determining profitability of a greenhouse flower growing business.

Students will select specific crops to be raised, keeping in mind the local flower markets, holiday and seasonal demands, and flower production schedules. They will utilize various production practices affecting greenhouse crop growing schedules. Students will spend nearly half of their time working with the crops in demonstrating practices.

Divisions or Units of Content	*Time Allocation* Class	Other
1 The Local Flower Market	4	2
2 Selecting, Scheduling, and Ordering	8	2
3 Demonstrate Growing Practices	2	12
	14	16

Title - Preparing Flowers for Sale *Code* - 01.0599-08

Description:

In this module, the students will market greenhouse grown cut flowers and potted flowering plants. They will cut, grade, condition, and pack cut flowers. They will also prepare, decorate, wrap and display potted flowering plants. This module will introduce students to the sales of floral products.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Cutting and Conditioning Cut Flowers	2	2
2 Grading and Packing Cut Flowers	2	6
3 Prepare and Wrap Potted Flowering Plants	2	6
4 Display of Potted Flowering Plants	4	6
	10	20

agricultural resources

Title - Maintenance and Management of Forest Plantations — *Code* - 01.0601-01

Description:

This module will cover all the aspects of forest plantation maintenance and management. This will include the identification of the important plantation species, the establishment of the plantation, forest stand improvement, protection of the plantation, and forest inventory. Emphasis will be placed upon the practical experience in site classification, weeding, thinning, and pruning. Student will know how and why a forest inventory is done. The greatest part of this module will be carried out in the field.

For more complete knowledge of the planting and protection procedures of forest plantations consult the modules entitled "Christmas Tree Production," and "Forest Fire Control."

Divisions or Units of Content	*Time Allocation* Class	Other
1 Identification of Important Plantation Tree Species in New York State		4
2 Establishing a Plantation		6
3 Forest Stand Improvement Methods		12
4 Protection of the Plantation		4
5 Inventorying the Forest Plantation	2	2
	2	28

Title - Management of Timber Stands — *Code* - 01.0601-02

Description:

This module deals with the management of naturally established woodlands for the harvest of wood products. The students will practice various cultural treatments to the stand (silvicultural) and various harvesting methods designed to permit different patterns of natural regeneration of the site by preferred tree species.

Divisions or Units of Content	*Time Allocation* Class	
1 Purposes and Scope	1	1
2 Natural and Economic Considerations		4
3 Silvicultural Treatments	1	11
4 Harvesting and Regeneration Methods	1	11
	3	27

Title - Campground Development and Management *Code* - 01.0602-01

Description:

Campground development is explored from the point of local demand, types of facilities that could be established, site selection, financial aid available, and the costs of development. The maintenance of a campground operation is examined in line of manpower needs and finances. The students will be guided through the various steps necessary to set up a campground section of land and how to avoid problems through good campground design.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Types of Campgrounds and Recreational Facilities	2	
2 Business Considerations	3	3
3 Selection of Campground Site		8
4 Site Design and Layout		14
	5	25

Title - Summer Recreation Areas - Operation and Maintenance *Code* - 01.0602-02

Description:

The student is exposed to all facets in the operation and maintenance of various kinds of summer recreation sites (exclusive of campgrounds) by visiting area commercial recreation sites, and by critically analyzing, on each site, a set of factors relating to physical facilities, business administration considerations, and clientele services.

The student is responsible for development of a written and graphic representation of the layout, operation, and maintenance of a hypothetical summer recreation enterprise on a specified site.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Introduction to the Study of Summer Recreation Area Operation and Maintenance	2	
2 Inventory and Analysis of Summer Recreation Site Facilities	6	6
3 Planning the Layout, Operation, and Maintenance of a Summer Recreation Site	10	6
	18	12

Title - Winter Recreation Site Operation and Maintenance Code

Code - 01.0602-03

Description:

The student is exposed to all facets in the operation and maintenance of various kinds of winter recreation sites by visiting area commercial recreation sites, and by critically analyzing on each site a set of factors relating to physical facilities, business administration considerations, and clientele services.

The student is responsible for development of a written and graphic representation of the layout, operation, and maintenance of a hypothetical winter recreation enterprise on a specified site.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Introduction to the Study of Winter Recreation Area Operation and Maintenance	2	
2 Inventory and Analysis of Winter Recreation Site Facilities	6	6
3 Planning the Layout, Operation, and Maintenance of a Winter Recreation Site	10	6
	18	12

Title - Soil Science

Code - 01.0603-01

Description:

The student will examine the common soil classes in the area and the economic importance of each class. Areas that exhibit these common soil classes, and soil profiles, will be visited to examine the physical composition of the soil, such as texture, structure, soil life, soil water, and the micro-organism present. Methods of soil sampling and testing will be tried, so that students will be able to test for ph in the field and interpret lab test results for phosphorus, potassium, and nitrogen. Land will be judged as to its capability for agricultural use and to its potential for various non-agricultural uses.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Soil Formation	1	6
2 Physical Composition	2	6
3 Soil Sampling and Testing	1	4
4 Land Capability	2	8
	6	24

Title - Soil and Water Management *Code* - 01.0603-02

Description:

The student will investigate the different soil and water problems found in the area and their ecological implications. Methods of erosion control will be studied in relation to topography, crop rotation, plant needs, and drainage. Areas will be visited that show examples of these soil, drainage, and water problems to see how some of these problems have been corrected in cooperation with the county soil conservation service technician. A complete soil and water management plan will be developed, using Land Use Classification maps of the area, erosion information, and working with the soil conservation service technician. An estimate of the costs and the equipment needed to do the job will be figured.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Soil and Water Problems		4
2 Methods, Control and Prevention	3	7
3 Development of Management Plan	4	12
	7	23

Title - Erosion Control *Code* - 01.0603-03

Description:

The student will study the different types of soil erosion, the causitive agents, and the methods of controlling erosion. Sites will be visited that exhibit active erosion and controlled erosion wherever possible. Where there is an active erosion problem methods of controlling erosion will be developed. One or more of these erosion control practices will be worked on to completion including heavy equipment work, seeding, and fertilizing.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Agents of Erosion	1	2
2 Factors Effecting Soil Erosion		3
3 Erosion Control Methods	1	3
4 Erosion Control Layout	1	5
5 Construction of an Erosion Control Device	1	13
	4	26

Title - Land Measurement *Code* - 01.0603-04

Description:

This module is designed to give the student experience in the basic forms of surveying. Emphasis will be placed on the accuracy of measurements. The major portion of the students time will be spent in the field working with staff compasses and steel tapes, learning the methods of determining right angles, and how to connect a series of successive instrument readings in a traverse survey.

Divisions or Units of Content	*Time Allocation* Class	Other
1 Methods of Linear Measurement	3	5
2 Use of a Compass	2	4
3 Traverse Methods	2	14
	7	23

Title - Advanced Surveying *Code* - 01.0603-05

Description:

The student will study and apply techniques of transit survey with tape or stadia, and field notes, in closing a simple traverse.

Students will conduct a simple plane table survey by intersection and will reduce field notes for plotting on a map.

A finished area map will be drafted utilizing lettering sets, pantographs, dot grids, and other drafting items.

Divisions or Units of Content	*Time Allocation* Class	Other
1 Use of the Transit and Allied Equipment in Traversing	1	5
2 Traverse Survey	5	5
3 Plane Table Survey by Intersection		8
4 Mapping	6	
	12	18

Title - Bulldozer Service and Operation *Code* - 01.0603-06

Description:

This module should consider the safe and effective operation of a track vehicle and the operation of the blade and accessory equipment. Students will be responsible for the complete daily maintenance and long-range maintenance of the machines. Experience will be gained in loading and unloading this equipment. The majority of the class time will be spent learning the operation of the blade control in cutting, leveling, and other more common operations.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Safety in Bulldozer Operation and Maintenance	1	1
2 Maintenance of Bulldozer, Daily, Weekly, and Long Range		5
3 Operation of the Blade		14
4 Operation of Track Vehicle		3
5 Operation of Accessory Equipment, i.e., Winch, Ripper, etc.		4
6 Loading and Unloading the Machine		2
	1	29

Title - Operation of Backhoe and Loader *Code* - 01.0603-07

Description:

The student will have practice in the safe operation of the backhoe and front end loader. They will perform daily and periodic, checks, service, and cleaning of the unit. Students will have experience in loading and unloading the machine.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Loading and Unloading		4
2 Daily and Weekly Maintenance		4
3 Operation of the Backhoe	1	13
4 Operation of the Front End Bucket Loader	1	6
5 Storage of Machine		1
	2	28

Title - Construction and Maintenance of Access Roads *Code* - 01.0603-08

Description:

Access roads are a vital link from the macadam highway into the center of timber stands and wilderness areas. They are usually constructed of materials found in the area of the road and are constructed only for limited access to the area. Students will lay out sites for an access road taking into consideration the slope of the terrain, type of soil the road will pass through, availability of road construction materials, ditching, and drainage patterns. Access roads will be constructed to meet approved student-designed specifications.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Purpose and Objectives in Construction of Access Roads		2
2 Planning		2
3 Location and Survey		10
4 Construction		14
5 Maintenance	2	
	2	28

Title - Operation of Sanitary Landfills *Code* - 01.0603-09

Description:

This module provides instruction and experience in the operation of a sanitary landfill. The student will be able to evaluate the land area as to suitability for disposal of garbage, refuse, and junk. The student will become familiar with landfill equipment such as trucks, rollers, bulldozers, and compactors. Actual separation of wastes with subsequent distribution in specific areas will be accomplished by the student.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Importance of Operation of a Sanitary Landfill	1	
2 Familiarity with Equipment		2
3 Site Review of Area		2
4 Separation of Solid Waste Components		10
5 Distribution of Solid Waste Components		11
6 Monitoring of Ground Water Leachate from Landfill Area		4
	1	29

Title - Conservation Law *Code* - 01.0604-01

Description:

This module focuses attention on the major aspects of conservation law in New York State and the types of public relations problems that can arise. Resource people in the conservation field will be enlisted to give the students firsthand learning experience. Active public relations programs will be undertaken by students to help promote better understanding and acceptance of all conservation laws pertinent to the local situation. Students will learn where and how to apply for permits and licenses covering various aspects of conservation.

Divisions or Units of Content	*Time Allocation* Class	Other
1 The History and Development of Conservation Laws in New York State	2	
2 The Laws Pertaining to the Wildlife of New York State	2	4
3 The Laws Pertaining to the Lakes and Streams of New York State	4	8
4 The Laws Pertaining to the Forests and Recreation Areas of New York State	2	2
5 The Laws Pertaining to Air and Water Pollution in New York State	2	4
	12	18

Title - Farm and Forest Game Management *Code* - 01.0604-02

Description:

This module is designed to give the student an understanding of the characteristics and requirements of both farm and forest game animals. The students will learn present-day management techniques through actual field and forest situations and experiences. A knowledge of local animals and their life cycles will be an important aspect of this module.

Divisions or Units of Content	*Time Allocation* Class	Other
1 The Principles of Game Management	4	2
2 Farm Game Management and Programs for Specific Game Species	2	9
3 Forest Game Management and Programs for Specific Game Species	2	11
	8	22

Title - Wetland Game Management *Code* - 01.0604-03

Description:

The student will develop and maintain a shallow water marsh area for water fowl and manage the area to increase its carrying capacity for water fowl. The management practices for water fowl will help the production of some furbearing animals. However, specific management practices for furbearers will not be stressed. The value of a wetland for water fowl will be stressed for its esthetic as well as economic value.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 The Need for the Development and Management of Wetlands for Water Fowl	2	
2 Essential Habitat Elements of a Marsh	1	4
3 Wetland Development	2	14
4 Management of a Wetland	1	6
	6	24

Title - Wildlife Disease and Pest Control *Code* - 01.0604-04

Description:

This module will give basic training to students working in all resource fields. It will emphasize the management objective of controlling wildlife numbers and the role disease plays in animal population.

Included are disease diagnostic methods and the laboratory work involving mortality analysis.

Students will be involved in field methods of animal control and will gain insight into various control equipment and techniques.

Many control programs are run to coincide with the harvestable surplus of various animals. Methods of handling a fur crop is also included.

Other areas that will be examined will include the ecological impact and animal population dynamics.

Title - Wildlife Disease and Pest Control (Cont'd)

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Big Four in Wildlife Management	1	2
2 Life Histories	1	2
3 Cause of Death Necropsy and Investigation	1	2
4 Trap Types, Care, and Use	1	3
5 Live Trap Construction	1	4
6 Trapping Methods	1	2
7 Pelt Preparation	1	5
8 Natural and Induced Control Methods	1	2
	8	22

Title - Stream Management *Code* - 01.0605-01

Description:

The students will be able to analyze a stream for its carrying capacity and water characteristics. Many of the aquatic organisms found in the stream will be studied in light of their relationship to tie fish population of the stream. Students will select material and build stream bank improvement structures and help plan the location of these structures. Students will learn how and where to get the necessary permits and permission to build stream improvement structures and where their local fisheries are located.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Determining the Carrying Capacity of a Stream	2	4
2 Determining Structures for Stream Management	1	3
3 Construction of a Stream Improvement Structure		12
4 Other Stream Improvement Practices	1	7
	4	26

Title - Water and Sewage Systems *Code* - 01.0605-02

Description:

The students will make an inventory of the water needs of a recreational facility or farm within their area and compute its requirements in line with existing consumption tables. They will learn the different sources of water impurities and how they can be removed from the water. The different types of pumps will be examined for both maintenance and repair purposes. Students will learn plumbing techniques, how to make pipe installations in steel, copper, and plastic, and when to use each type. The newest types of sewage holding tanks and disposal fields will also be examined.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Water System Planning	2	
2 Sources of Water	1	
3 Providing Safe Water		6
4 Improving Water Quality	1	
5 Water Pumps, Use and Maintenance	2	8
6 Steel, Copper, and Plastic Pipe Installation		4
7 Sewage Holding Tanks	1	2
8 Sewage Disposal Fields	1	2
	8	22

Title - Collection of Water Samples *Code* - 01.0605-03

Description:

This module provides instruction and experience in the collection of water samples from streams, sewers, and sewage treatment plants. The student will make an area reconnaissance, select sampling points, collect grab samples, and prepare composite samples in accordance with flow data. The majority of the class time will be spent on site at the three different sampling areas.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Importance of Sample Collection	2	
2 Collection of Samples at a Sewage Treatment Plant		10
3 Collection of Samples From a Sewer		10
4 Collection of Samples From a Stream		8
	2	28

Title - Analysis of Water and Wastewater Samples (I) *Code* - 01.0605-04

Description:

This module provides instruction and experience in the analysis of water and wastewater samples by standard methods accepted and utilized by industry. The student will receive instruction in laboratory safety, definition of metric units for weight and volume measures, and the basic operation of laboratory instrumentation, such as an analytical balance, pH meter, and muffle furnace. The student will analyze water and wastewater samples for pH, total solids, suspended solids, turbidity, and color. The majority of the class time will be spent in a laboratory.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Familiarization of Laboratory Safety Aspects and Terminology	1	3
2 Use of Basic Laboratory Equipment		6
3 Determination of pH in a Water Sample		4
4 Determination of Total Solids Concentration in Water Samples		6
5 Determination of Suspended Solids Concentration in Water Samples		6
6 Determination of Turbidity in Water Samples		2
7 Determination of Color in Water Samples		2
	1	29

Title - Analysis of Water and Wastewater Samples (II) *Code* - 01.0605-05

Description:

This module provides instruction and experience in the analysis of water and wastewater samples by standard methods accepted and utilized by industry. The student will analyze water and wastewater samples for chemical oxygen demand, biochemical oxygen demand, and dissolved oxygen. He will continue his general familiarization with laboratory equipment as well as mathematical calculation of final values from raw laboratory data. The majority of the class time will be spent in a laboratory.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Review of Laboratory Safety	1	1
2 Determination of Dissolved Oxygen Content in Water Samples	1	5
3 Determination of 5-Day Biochemical Oxygen Demand Content of Water Samples	1	12
4 Determination of the Chemical Oxygen Demand Content of Water Samples	1	8
	4	26

Title - Sewage Treatment Plant Operation (I) *Code* - 01.0605-06

Description:

This module provides instruction and experience in the general operation of a sewage treatment plant. The student will learn of the sources of sewage and its composition. He will receive instruction in treatment plant safety as well as the use of preliminary treatment such as bar screens, grit chambers, and communitors. The student will observe the operation and functioning of a primary settling tank and the activated sludge secondary treatment step. He will participate in the maintenance of both the primary and secondary treatment steps. The majority of the class time will be spent at a sewage treatment plant.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Introductory Principles of Sewage Treatment	2	2
2 Treatment Plant Safety		2
3 Preliminary Treatment		4
4 Primary Treatment Step		10
5 Use of Activated Sludge for Secondary Treatment		10
	2	28

Title - Water Treatment Plant Operation *Code* - 01.0605-07

Description:

This module provides instruction in water sources and water uses. Standards for drinking water are provided and the different methods of water treatment are demonstrated. The student will receive instruction in filtration, chlorination, and softening of a water supply source. The student will conduct a chemical analysis for chlorine residual and hardness parameters. The student will also receive instruction in basic treatment plant maintenance.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Introductory Principles of Water Treatment	2	2
2 Water Treatment Plant Safety Aspects		2
3 Filtration		8
4 Chlorination		8
5 Softening		8
	2	28

Title - Atmospheric Sampling of Stacks *Code* - 01.0606-01

Description:

This module provides instruction and experience in the sampling and analysis of particulate emissions from exhaust stacks. The student will be able to understand the importance of source emission sampling and its relationship to the processes which produce the particulate matter. The student will participate in the selection of a sampling point, performance of a flow measurement traverse and collection of a particulate sample from an exhaust stream. The majority of the class time will be spent in the special laboratory and in the field at an industrial plant location.

Divisions or Units of Content	*Time Allocation* Class	Other
1 Introductory Discussion of Importance of Sampling of Stacks	2	-
2 Safety Aspects Concerned With Sampling Stacks	1	2
3 Preparation For Stack Sampling	-	6
4 Flow Measurement	-	8
5 Sampling for Particulate Emissions	2	9
	5	25

Title - Fish Management *Code* - 01.0607-01

Description:

The students will gain experience in fish survey methods using trapping, netting, and stocking to establish population counts in lakes, ponds, and streams. The relationship and interrelationships of one fish to another and fish to other major water organisms will be studied. The student will develop a knowledge of the needs of each species found in the pond as it relates to good fish management. Experience will be gained by working with local members of the Environmental Conservation Department in fish transportation and stocking programs carried out within the area.

Divisions or Units of Content	*Time Allocation* Class	Other
1 Identifying Internal Parts of a Fish	1	3
2 Identifying External Parts of a Fish	1	3
3 Determining Fish Sustaining Criteria Through Water Analysis	2	6
4 Trapping, Netting, and Stocking Fish for Survey Work	1	8
5 Transporting and Stocking Fish	1	4
	6	24

Title - Leveling *Code* - 01.0699-01

Description:

The students will learn where surveying instruments are used and how to set them up and use them in a field situation. They will set an instrument over a given fixed point and locate other points in a field in relation to that point. They will measure slopes of varying degree and establish the contour lines of a field. In differential and profile leveling, students will keep a proper notebook and records.

Divisions or Units of Content		*Time Allocation*	
		Class	*Other*
1	Definition of Leveling	2	
2	The Tripod and Instrument	2	4
3	The Rod		4
4	Locating Contour Lines		4
5	Measuring Degree of Slope		4
6	Field Note Taking	2	8
		6	24

Title - Conservation Structures (Masonry) *Code* - 01.0699-02

Description:

The students will stake out a building on a predetermined location. They will erect batter boards to designate where the four corners will be located and mark the boards to insure a square and level building foundation. Many types of concrete masonry materials will be used so that the students will gain experience by constructing various structures. Different concrete mixes will be fitted to the appropriate job requirements. The students will figure the amounts of concrete and other materials necessary to complete a small masonry job.

Divisions or Units of Content		*Time Allocation*	
		Class	*Other*
1	Staking Out a Building with the Level	1	4
2	Batter Board Erection		4
3	Survey of Materials Used on a Masonry and Wall Construction		2
4	Making Quality Concrete	1	4
5	Wall Construction with Block Units		6
6	Concrete Slabs		2
7	Constructing a Small Concrete Structure	1	5
		3	27

Title - Conservation Structures-Carpentry *Code* - 01.0699-03

Description:

This module will give training to the resource worker who eventually will be involved in some phase of building or maintenance of structures. Training will include drafting of project plans and quantity cost lists to avoid waste and develop the ability to calculate small project costs. Students will be involved in the use of major hand and power tools and correct construction materials. Content also includes involvement in rough framing techniques used in building construction. A portion of shop work will include project construction.

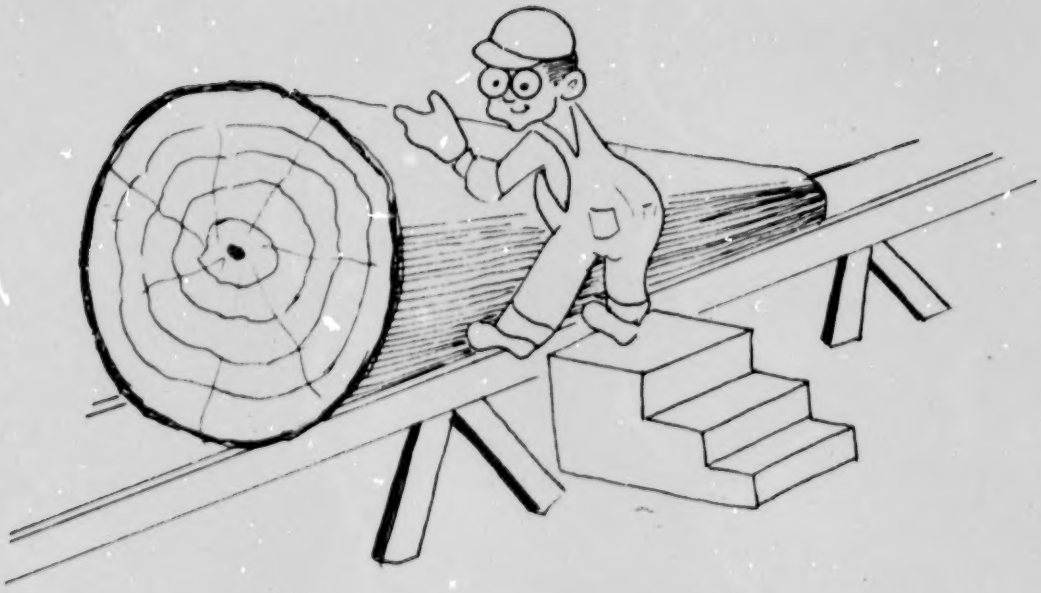
Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Three View Project Planning	2	
2 Quantity-Cost List Development	1	1
3 Tool Identification and Use	1	1
4 Wood Fasteners	1	1
5 Construction Material	1	2
6 Rough Framing	2	3
7 Wood Waste Planning	1	
8 Conservation Project Construction		10
9 Wood Waste Project Construction		3
	9	21

Title - Service and Repair of Conservation Equipment *Code* - 01.0699-04

Description:

This module is planned to review the equipment that has been and is going to be used in the conservation program with an eye to keeping each piece of equipment in shape for use when needed. Every piece of equipment must have day-to-day maintenance plus long-range maintenance. The students will adjust and sharpen hand tools and repair the tools where possible. The power equipment will be serviced as part of a year-round maintenance plan. Minor repairs will be made to the equipment to keep it in good working order. Each student will have the opportunity to work on the various pieces of equipment that are closely allied to his interests and occupational goals.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Hand Tools	2	8
2 Power Tools	4	16
	6	24



forestry

Title - Forest Fire Control *Code* - 01.0702-01

Description:

This module will give fire control training to men who will be working in all fields of conservation. Students will be involved in the basic concepts and applications of pre-fire measures, including equipment readiness, fire prevention, and knowledge of the area for quick response to any fire situation. They will be involved in the process of pinpointing the location of fires and the use of an Osborne Fire Finder where one is available. Experience will be provided in the use of hand firefighting equipment, and in the coordination of firefighters in fighting large fires. The use of fire as a forest management tool will also be examined.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Introduction to Forest Fire Control	1	2
2 Presuppression Measures	2	9
3 Fire Behavior	1	2
4 Fire Suppression Measurers	1	7
5 Fire Control Equipment	1	4
	6	24

Title - Harvesting Timber and Pulp *Code* - 01.0703-01

Description:

The students will lay out a forest area and locate access roads and loading sites. The students will then prepare the area for actual forest operations and begin the harvesting process. Emphasis will be placed on the students' ability to lay out the wood lot, observe proper safety procedures, work as a crew member, and properly go through the steps of felling, bucking, limbing, skidding, and loading timber and pulp. Instruction will also include daily field maintenance of all harvesting equipment.

Students will develop a knowledge of harvesting methods that benefit multiple use and sustained yield management planning by proper sale contract writing and planning. It is recommended that the Module, Operation of Timber Harvesting Equipment be a prerequisite to this module.

Title - Harvesting Timber and Pulp (Cont'd)

Divisions or Units of Content		*Time Allocation* Class	Other
1	Base Map Preparation	2	1
2	Proposed Operation Plan	2	2
3	Timber Sale Contracts	2	1
4	Multiple Use Objectives	1	1
5	Harvesting Safety		4
6	Working Procedures		4
7	Crew Assignment		4
8	Equipment Field Maintenance		4
9	Chain Saw Daily Field Maintenance	1	1
		8	22

Title - Operation of Timber Harvesting Equipment *Code* - 01.0703-02

Description:

This module stresses safe and effective selection, use, and maintenance of timber harvesting equipment. This includes tools and equipment used in the felling of trees and the bucking, yarding, skidding, and loading of timber and pulp wood. Students will be rotated through the various stages of timber harvesting so they will get experience in the whole process. The students will spend all of their time in the field situation using equipment common to the area.

Divisions or Units of Content		*Time Allocation* Class	Other
1	The Felling of a Tree in a Forest Situation		6
2	The Limbing of a Tree in Preparation for Skidding and Loading		6
3	The Bucking of a Tree in Timber and Pulp Wood Preparation		6
4	The Skidding of Timber Safely from the Woods to the Loading Site		6
5	The Proper and Safe Techniques in Loading Timber and Pulp Wood		6
		0	30

Title - Scaling and Marking *Code* - 01.0703-03

Description:

This module provides experience for a forest or resource worker in timber marking and in the grading and scaling of timber and logs.

Students will perform field work using log rules, volume tables, and other equipment used in log and tree scaling. Work will include defect deduction in volume calculation.

Field work will include study of log grade determination and visual cull deduction indicators.

Cord wood determinations, along with the application of other units of measure (i.e. - board foot, piece, linear foot, etc.), will be made.

Divisions or Units of Content		*Time Allocation*	
		Class	*Other*
1	Cord Measurement	2	
2	Units of Measure	2	4
3	Cordwood Scaling	1	4
4	Log Rules	2	
5	Volume Tables	3	
6	Scales Stick Construction	1	3
7	Saw Log Scaling		3
8	Risk Tree Marking		3
9	Limiting D.B.H. Marking		2
		11	19

Title - Timber and Log Conversion *Code* - 01.0703-04

Description:

Students will assist in the planning and layout of a sawmill. They will study and perform millwrighting operations. Students will understand principles and procedures of grading logs and lumber. They will tally, scale, and grade logs and saw timber. Students will participate in conversion of saw logs to lumber, performing the operations of edging, trimming, piling, and marketing of the product. Students will study and investigate many of the career opportunities in the forest industries.

Title - Timber and Log Conversion (Cont'd)

Divisions or Units of Content	*Time Allocation* Class	Other
1 Grading and Scaling Logs	1	1
2 Planning and Layout of Mill	2	2
3 Millwrighting Procedures	2	4
4 Operating Mill (Headsaw, Edger, Trimmer)	1	4
5 Edging and Trimming	1	4
6 Tailing Procedures - Piling Waste		2
7 Grading and Tallying Lumber and Marketing Product	2	2
8 Studying Occupational Opportunities and Understanding Forest Industries	1	1
	10	20

Title - Christmas Tree Production and Marketing *Code* - 01.0706-01

Description:

This module goes through the complete cycle of Christmas tree production from ordering the trees to harvesting and marketing. Students will be planting trees they themselves have ordered. They will heel in trees to hold them for planting, plant trees, prune more mature trees to shape them, and cut them for sale. They will learn how to color trees in areas where there is a demand, establish a price for each tree, and set the trees up for retail sale.

The units within the module should, by their nature, be taught at different times of the year. A recommendation is: that objectives numbered 1-6 on plantation development be taught during spring planting for a period of approximately 3-5 days; that number 7 on plantation improvement practices be taught in June for a period of approximately 3-5 days; and that objectives 8-10 on harvesting and marketing be taught in December for a period of approximately 2-3 weeks. For an instructor handling his own scheduling, this recommendation may be relatively simple. Instructors trying to schedule their program in cooperation with several other instructors and programs may have to make special arrangements satisfactory to their particular situation.

Divisions or Units of Content	*Time Allocation* Class	Other
1 Plantation Development	1	9
2 Plantation Improvement and Maintenance Practices	2	8
3 Harvesting and Marketing	1	9
	4	26

Title - Maple Products Production *Code* - 01.0706-02

Description:

The student will be involved in the production of maple products from the selection of trees to be tapped in the grove, to the making of hard sugars and other maple products.

A contract may be drawn up that will allow students to tap trees in a specific sugarbush block and records kept on production costs and syrup produced.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Setting Up the Sugarbush for Sugaring		15
2 Collecting and Evaporating the Sap		
3 Grading Syrup and Making Sugar Products	2	2
4 Cleaning, Inventorying, and Storing of Equipment		4
5 Yearly Management of the Sugarbush		6
6 Conclusion	1	
	3	27

occupational experience and leadership development

MODULES OF INSTRUCTION IN LEADERSHIP DEVELOPMENT

Title - Developing Leadership in the Individual *Code* - 01.9902-01

Description:

Leadership or guidance is necessary in any society. In its absence we have chaos. The ability to render this leadership is not an innate characteristic. It is learned and developed through training and/or experience.

This module is designed to help the student develop his leadership ability. He will learn what leaders are and how they can differ. He will learn the goals of leadership and basic principles a leader should adopt. The remainder of the module is concerned with the skills a leader must have to function in his position. Not only the leadership skills such as speaking and group guidance, but also the social skills which are so important in dealing with others will be stressed.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Types of Leadership	3	4
2 Social Skills	3	8
3 Leadership Skills	2	10
	8	22

Title - Group Leadership Techniques *Code* - 01-9902-02

Description:

One of the most important activities of a leader is working with groups of people in an effort to achieve certain goals.

This module is designed to help the student develop the knowledge and skill necessary to effectively guide a group and work in a group. The student will become familiar with the differences between groups and the different roles a group member may assume. He will identify the desirable characteristics of a group leader and his responsibilities to the group members. Finally, he will develop techniques for solving problems and making decisions in a group situation.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Groups and Individuals	2	4
2 Developing Use of Techniques	2	3
3 Group Leadership	3	1
4 Problem Solving	7	8
	14	16

Title - Organizing an FFA Chapter *Code* - 01.9902-03

Description:

The FFA is an organization of, by, and for young men and women studying vocational agriculture in secondary schools. It is an intracurricular activity which complements the vocational agriculture program in the local school.

This module is designed to acquaint the student with the opportunities available to him through the FFA, guide him in helping to make a decision about forming a chapter, and if the decision is positive, to give him an active role in the organization of the chapter.

He will be required to familiarize himself with the FFA Organization, participate in a cooperative or competitive activity which is closely related to his area of study in agriculture, participate actively on committees, and contribute to discussion at all stages of the planning process.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Need for Organization	4	5
2 Decisions in Organizing	2	1
3 Organizing a Chapter	8	10
	14	16

Title - The FFA Organization (I) *Code* - 01.9902-04

Description:

In this module the student will be actively involved in the FFA. Most of the activity will be centered around the several parts of the FFA dealing with program development. Each student will be examining, planning, and conducting activities which will result in personal benefits from the FFA.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Place and History of FFA	4	2
2 Basic FFA Organization	7	17
	11	19

Title - The FFA Organization (II) *Code* - 01.9902-05

Description:

This module is intended for students interested in developing an in-depth knowledge of the FFA. The student will study the FFA purposes, benefits, and programs. Information and experiences gained from this module should assist the student in participating in the FFA contests, activities, and awards. The module will involve the student in active participation in accomplishing the objectives.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Basic FFA Information	4	2
2 Application	2	6
3 Benefits and Involvement	6	10
	12	18

Title - FFA Activities and Awards *Code* - 01.9902-06

Description:

The student will participate in preparing a chapter program of activities based on a review of all FFA awards, contest, and activities available. This program of activities will also reflect the students' assessment of needs in the community which could be met by FFA activities. Making out applications and planning for and competing in activities will be part of this module. The students will be expected to develop basic proficiency in application writeup and contest preparation to compete on the chapter level.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Planning and Carrying Out Activities	5	7
2 Contests and Awards	7	11
	12	18

Title - Parliamentary Procedure *Code* - 01.9902-07

Description:

The goal of this module is to give students a working knowledge of parliamentary procedure, particularly as it is used in the FFA.

By the end of this module, the students will be able to actively participate in a given meeting in any of three capacities: chairman, secretary, or delegate.

The students will learn the advantages of using parliamentary law in the conduct of meetings as well as the rules governing its use. They will spend much time in practice meeting situations selecting and making proper and appropriate motions to accomplish some specific action. Finally, each student will prepare a set of minutes of a meeting using basic rules presented in class.

Divisions or Units of Content	*Time Allocation*	
	Class	*Other*
1 Basic Information	2	2
2 Classification of Motions	2	1
3 Selection and Use of Motions	4	5
4 Group Action on Proposed Ideas	2	2
5 Taking Minutes	2	4
6 Terms Associated With Parliamentary Procedure	2	2
	14	16